HI-FLEX SERIES
Modular Power Supplies

Plug & Play DC Power Supplies

The H-Flex Series of modular power supplies consists of two input power chassis that can be configured with a wide selection of 48 DC Output Modules for millions of possible output voltage combinations ranging from 1.5~60VDC. The flexibilit of these products eliminate the need for custom power supplies and the time / costs associated with their development and safety approval processes.

HF10 AC Input Chassis
- 700 / 1000 Watts
- 5 Configurable Slots
- Up to 15 Configurable Outputs
- 11.00 x 5.00 x 2.50”

HF16 AC Input Chassis
- 1000 / 1600 Watts
- 8 Configurable Slots
- Up to 24 Configurable Outputs
- 11.00 x 8.00 x 2.5”

200W Single Output Modules
- 1 Slot Width
- Parallelable Outputs
- OVP / OCP / OTP Circuits
- Module-Specic Stats & Control

100W Multi Output Modules
- 1 Slot Width
- Dual or Triple Outputs
- OVP / OCP / OTP Circuits
- Module-Specic Stats & Control

UL60950-1 UL60601-1 | 22.2 # 60950 | EN60950-1 EN60601-1 | IEC60950-1 | L.V.D.

- 5 available Slots
- 200 Watt Single Output Modules
- 100 Watt Triple Output Modules
- Up to 15 Custom Output Voltages
- Internal OR’ng Diodes for redundant operation
- Screw Terminal, Molex or Positronic Connectors
- >250k Hours MTBF (30°C and Full Load) Minimum
- Orders configured and shipped same day!
- Universal AC INput with Acive PFC
- All outputs trimmable ±10%
- Full Featured Status & Control Signals including:
  - 5V Standby (300mA)
  - Global Enable / Inhibit
  - Globla DC OK & AC OK
  - Active Current Share (V1)
  - Current Monitor (V1)
  - Remote Sense (V1)
  - Voltage Morgining (Singles)
  - Module Enable / Inhibit

LHV power™

Electrical Characteristics:

INPUT SPECIFICATIONS:

VOLTAGE	Universal Input Range (85-264 VAC / 120-350 VDC)
FREQUEBCY	47-440Hz
INRUSH	40 Amp (Max Cold Start)
EFFICIENCY	>75% Typical
POWER FACTOR	0.99 Typical (EN61000-3-2 Class D Compliant)
TURN-ON TIME	1.5 Seconds after AC Applied
	or 150ms after outputs are enabled
LEAKAGE CURRENT	750µA max @ 240 VAC (300µA with Medical Option)
HOLD-UP TIME	20ms minimum (120 VAC Operation)
SWITCHING FREQUENCY	100KHz (PFC Input Circuit))
INPUT PROTECTION	HF10 =Dual Fused (12A / 250 VAC)
	HF16=Dual Fused (20A / 250 VAC)

OUTPUT SPECIFICATIONS:

WATTAGE	HF10 = 700W @ <180 VAC / 1000W >180 VAC Operation
	HF16 = 1000W @ <180 VAC / 1600W >180 VAC Operation
MINIMUM LOAD	None Required
ADJUSTMENT	±10% All Outputs
REGULATION	200 Watt Single Output modules = 0.4%
	100 Watt Triple Output modules = 5%
RIPPLE / NOISE	1% or 50mV pk-pk max (whichever is greater), 20 MHz
SWITCHING FREQUENCY	200kHz (DC Output Modules)
DEVIATION	4% 2ith a 25% load step
RECOVERY TIME	300µsec
OVER-CURRENT PROTECTION	Single Output Modules = 105-150% of iMax
	Triples are internally protected
OVER-VOLTAGE PROTECTION	V1 Only, 1.5~5.5V = 122-134% | 6-60V = 110-134%
	Recycle AC Input to reset OVP circuit
SHORT CIRCUIT PROTECTION	Continuous with auto-recovery
REVERSE VOLTAGE	100% of rated current
STANDBY VOLTAGE	5VSB / 300mA
OUTPUT ISOLATION	>1 Megaohm

SAFETY APPROVALS:

UL/cUL	60950-1
CSA	No 22.2 60950-1
TUV	EN60950-1
CB REPORT	IEC60950-1
CE MARK	Low Voltage Directive

STATUS & CONTOL:

VISUAL INDICATORS	DC OK (green), AC OK (green), Fan Fail (Yellow), OTP (Orange)
AC OK	goes low >5ms befor loss of DC regulation
DC OK	V1 Outputs within 10% of Vnom
FAN FAIL	Goes lowwhen fan speed falls below acceptable levels
INHIBIT / ENABLE	Global = Signal controls all outputs (on/off)
	Module = Signal controls moduale outpus (on/off)
REMOTE SENSE	V1 only, compenstates for <250mV drop
CURRENT SHARE	Provides ±5% Currenty Share Accuracy (V1 Only)
CURRENT MONITOR	0-10V Signal 0-100% Load (Single output modules only)
REMOTE MARGINING	Provides remote ±5% Voltage adjustment

ENVIRONMENTAL SPECIFICATIONS:

OPERATING TEMPERATURE	-20~+50°C, derate 2.5%/°C above 50°C up to 70C
STORAGE TEMPERATURE	-40 ~ +85°C
OVERREMP PROTECTION	All Outputs disabled > safe internal temperature
TEMP COEFFICIENT	±0.2% per °C
COOLING	Internal Ball Bearing Fan
OPERATING HUMIDITY	0-95% (Non-Condensing)
VIBRATION / SHOCK	Per Mil-Hdbk 810E
ACOUSTICAL NOISE	<45dBA @ 1 meter from surface
ALTITUDE	10,000 ft maximum
RELIABILITY	250k Hours MTBF per MilStd 217E (Full Load & 30°C Operation)

EMISSIONS:

EMISSIONS	EN55022/ CISPR 22 Level B (Conducted)
ELECTROSTATIC DISCHARGE	EN61000-4-2, 8kV, Level 4
RADIATED SUSCEPTIBILITY	EN61000-4-3, Level 3
EFT / BURSTS	EN61000-4-4, ±4kV, Level 4
SURGES	EN61000-4-5, 2kV Earth, 1kV Line-Line, Class 3
CONDUCTED IMMUNITY	EN61000-4-6, 0.15-800MHz, 10V 80%
VOLTAGE DIPS	EN61000-4-10, 95% Dip & 10ms, 30% Dip & 500ms
VOLTAGE INTERRUPTIONS	EN61000-4-11, 95% reduction, 5ms
FLUCTUATIONS & FLICKER	EN61000-3-3

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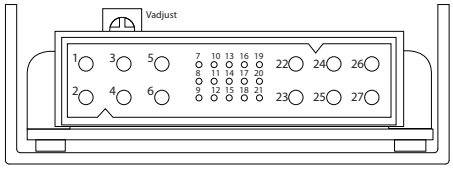
DC Output Modules

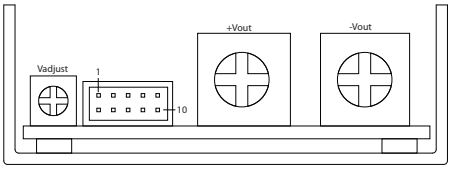
75-210W SINGLE OUTPUT MODULES

V out	Amps	Power	Module Code
1.5V	50A	75W	A
2.0V	50A	100W	B
2.2V	50A	110W	C
3.0V	50A	150W	D
3.3V	50A	165W	E
5.0V	40A	200W	F
5.2V	40A	208W	G
6.0V	34A	204W	H
9.0V	21A	189W	I
10.0V	20A	200W	J
11.0V	18A	198W	K
12.0V	17A	204W	L
14.0V	15A	210W	M
15.0V	14A	210W	N
18.0V	12A	216W	O
20.0V	10A	200W	P
24.0V	9A	216W	Q
28.0V	7.5A	210W	R
30.0V	7A	210W	S
33.0V	6.4A	211W	T
36.0V	6A	216W	U
42.0V	5A	210W	V
48.0V	4.5A	216W	W
54.0V	4A	216W	X
56.0V	3.8A	213W	Y
60.0V	3.5A	210W	Z



"P" MATING CONNECTOR: Positronic # ASK20019-PA071

Pin	Function	Pin	Function	Pin	Function
1	N/C	10	+Remote Sense	19	- Module Inhibit
2	N/C	11	Margin Low (Pin 21)	20	+ Module Inhibit
3	N/C	12	N/C	21	Margin Low (Pin 11)
4	N/C	13	-Sense	22	+Vout
5	N/C	14	N/C	23	+Vout
6	N/C	15	N/C	24	+Vout
7	Margin High (pin 13)	16	Current Share	25	-Vout
8	N/C	17	Current Monitor	26	-Vout
9	N/C	18	N/C	27	-Vout



"M" MATING CONNECTOR: IIDA Electronics DF11-10DF-2DS or MOLEX connector 87333-1020

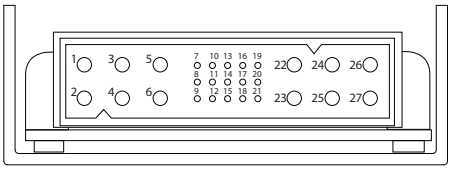
Pin	Function	Pin	Function	Pin	Function
1	Current Monitor	5	+Module Inhibit	8	Margin High (Pin 7)
2	+Remote Sense	6	-Module Inhibit	9	Margin Low (Pin 10)
3	Current Share	7	Margin High (pin 8)	10	Margin Low (Pin 9)
4	-Remote Sense				

100 W DUAL OUTPUT MODULES

V1 Out	V2 Out	Power	Module Code
5V @ 10A	5V @ 10A	100W	a
12V @ 8A	12V @ 7A	100W	b
12V @ 10A	5V @ 10A	100W	c
15V @ 7A	15V @ 6A	100W	d
18V @ 5A	18V @ 5A	100W	e
24V @ 4A	24V @ 4A	100W	f
8V @ 10A	8V @ 10A	100W	g
3.3V @ 10A	5V @ 10A	100W	15

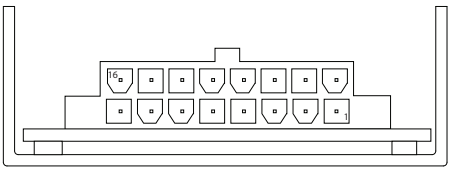
100W TRIPLE OUTPUT MODULES:

V1 out	V2 Out	V3 Out	Module Code
5V@ 15A	12V@ 9A	+5V@1A	1
5V@ 15A	12V@ 9A	-5V@1A	2
5V@ 15A	12V@ 9A	+12V@1A	3
5V@ 15A	12V@ 9A	-12V@1A	4
5V@ 15A	24V@ 4A	+5V@1A	5
5V@ 15A	24V@ 4A	-5V@1A	6
5V@ 15A	24V@ 4A	+12V@1A	7
5V@ 15A	24V@ 4A	-12V@1A	8
5V @ 15A	15V @ 4A	-15V @ 2A	9
5V @ 15A	15V @ 4A	15V @ 2A	10
3.3V @ 15A	15V @ 4A	-15V @ 2A	11
3.3V @ 15A	15V @ 4A	15V @ 2A	12
3.3V @ 15A	12V @ 4A	12V @ 2A	13
3.3V @ 15A	12V @ 4A	-12V @ 2A	14



MATING CONNECTOR: Positronic # ASK20019-PA072

Pin	Function	Pin	Function	Pin	Function
1	Return	10	Global Inhibit (non-iso)	19	+ Module Inhibit
2	Return	11	Global DC (Collector)	20	Module Inhibit (non-iso)
3	+V1	12	Global DC OK Emitter	21	-Module Inhibit
4	+V1	13	+Global Inhibit	22	N/C
5	+V2	14	AC OK Collector	23	Frame Ground
6	+V3	15	AC OK Emitter	24	AC Input (Line)
7	+5VSB	16	Current Share	25	N/C
8	5VSB Return	17	V1 Current Monitor	26	N/C
9	5VSB Return	18	-Global Inhibit	27	AC Input (Neutral)



"M" MATING CONNECTOR: : Molex PN:5569-NA1-16PIN or CHYAO SHIUMN JS-1154-16

Pin	Function	Pin	Function	Pin	Function
1	Current Share (V1)	6	V3 Output or N/C	11	+V1
2	Current Monitor (V1)	7	V2 Output	12	+V1
3	Module Inhibit (non-iso)	8	V2 Output	13	Return
4	+Module Inhibit	9	+V1	14	Return
5	-Module Inhibit	10	+V1	15	Return
				16	Return

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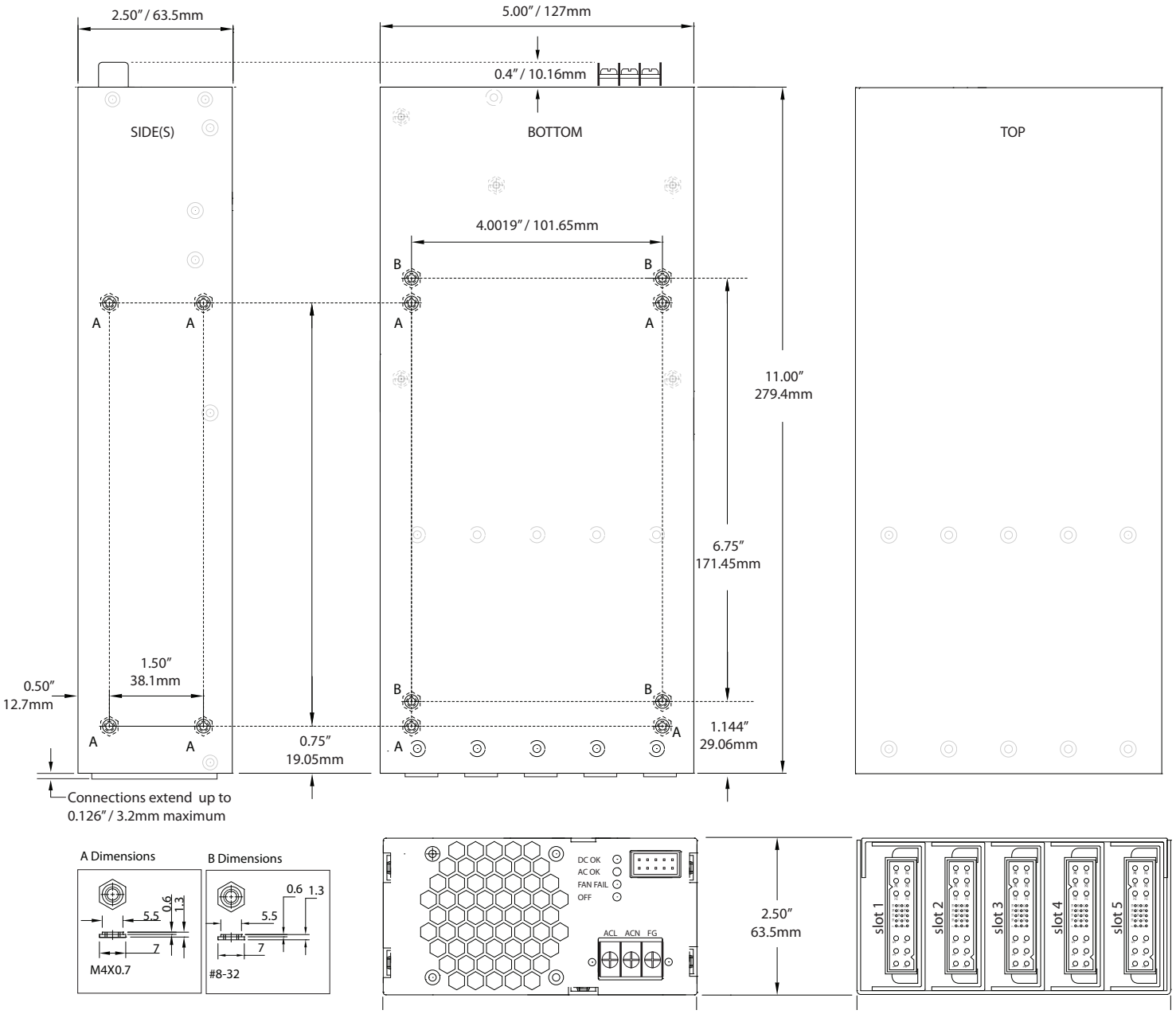
HF10 Chassis:

1000 Watts Maximum Output Power



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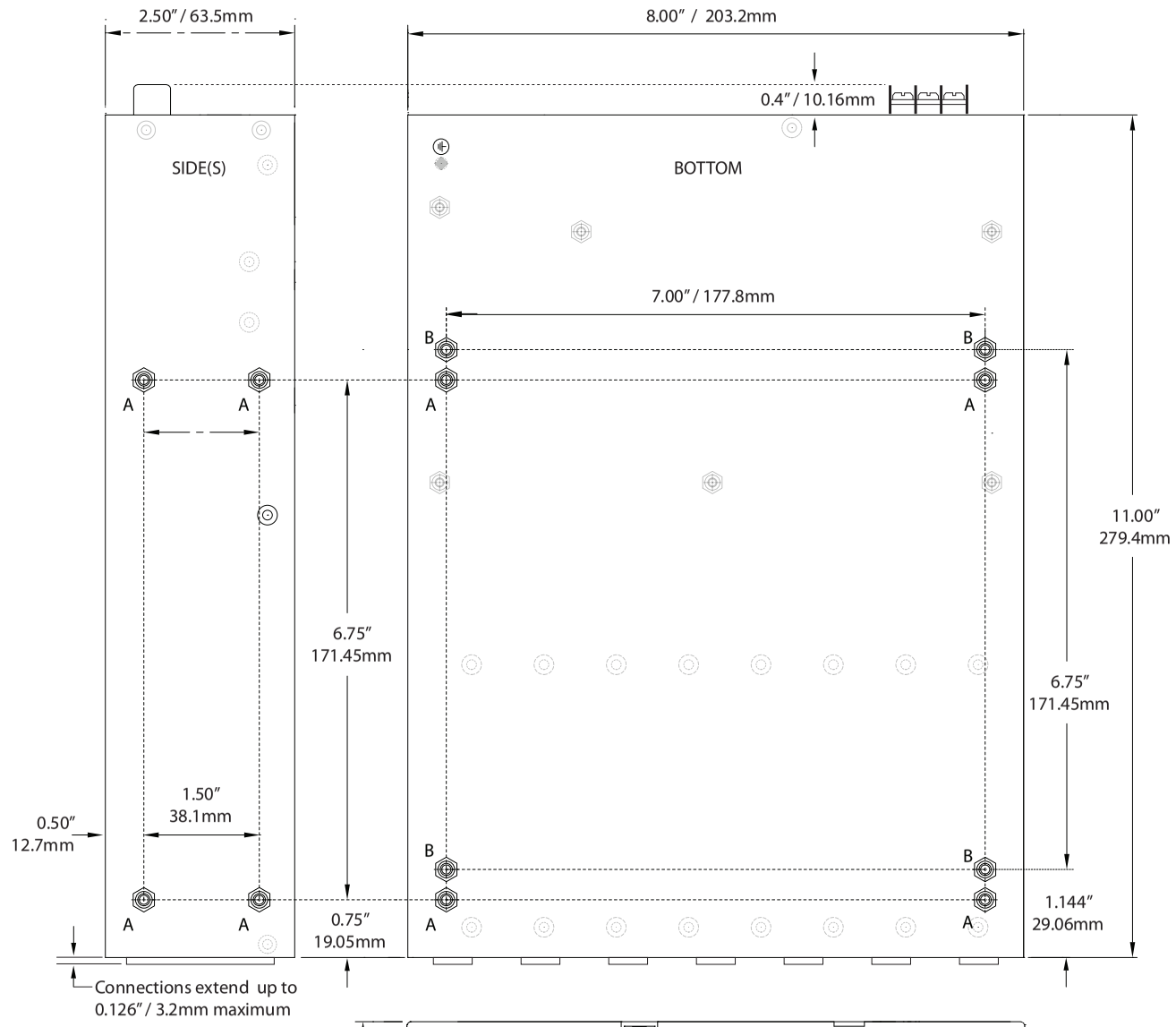
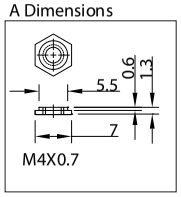
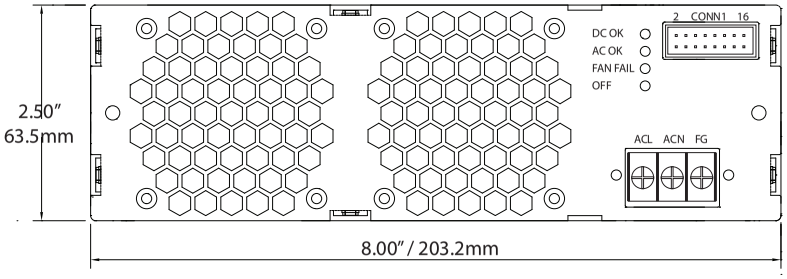
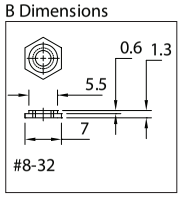
HF16 Chassis:

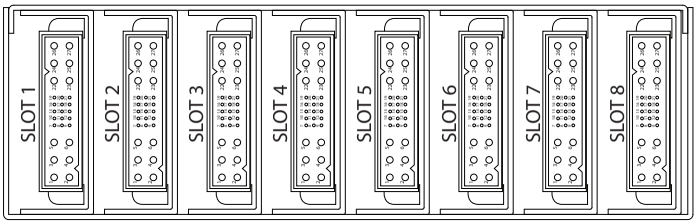
1600 Watts Maximum Output Power











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Configuration Guide:

An LHV Applications Engineer will review each application to ensure best configuration to fit the requirement.

HF ___ - ___ - ___ - YYYYYYYY - ####

- #### — Customer / Application Designator (unique to each application)
- YYYYYYYY — OUTPUT MODULE CODE(S)
- ___ (3rd) — P = Positronic Output Connector; M = Industrial Output Connector
- ___ (2nd) — S = UL60950-1 / EN60950-1 Safety Approvals (Industrial); M = UL60601-1 / EN60601-1 Safety Approvals (Medical)
- ___ (1st) — 10 = 1000 Watt Chassis; 16 = 1600 Watt Chassis

Note:

* Front-Panel Retraction Handle included automatically when ordered with Positronic Connectors
* Consult LHV Power for Thermally Controlled Fan Option for reduced audible noise
* Consult LHV Power for rear panel AC Input with Positronic or Industrial Connector
* Blank Panels included automatically (no part number designation required)
* Module order defined for each application (Highest Load in slot 1 then descending order)

HF10 Chassis * 700 Watts Low-Line * 1000 Watts Hi-Line * 5 Module Slots for up to 15 Outputs	**200 Watt** Single Output Power Module (Indutrial Connectors)	**100 Watt** Multi Output Power Module (Indutrial Connectors)
HF16 Chassis * 1000 Watts Low-Line * 1600 Watts Hi-Line * 8 Module Slots for up to 24 Outputs	**200 Watt** Single Output Power Module (Hot-Swap Connectors)	**100 Watt** Multi Output Power Module (Hot-Swap Connectors)

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