

Modular High Power System

Data Sheet

Up to 24000 Watts

Total Power: Up to 24 KW **Input Voltage:** 180-264 Vac

342-528 Vac

Single or 3-Phase for

iHP12

3-Phase for iHP24 540-660 Vac 3-Phase for iHP24C

of Outputs: Up to 8



SPECIAL FEATURES

- 5 years manufacturer's warranty
- Multi output intelligent and modular high power system
- Standard 19" rack
- Outputs parallel up to 1600 A
- Outputs series up to 1000 V
- 100% digital control
- Outputs program as voltage or current source
- Versatile input configurable to:
 - Low line 180-264 Vac single phase and 3-phase
 - High line 342-528 Vac 3-phase
 - High line 540-660 Vac 3-phase (iHP24C)
- Medical safety approved NO ISOLATION XFMR NEEDED
- Flexible control interfaces (Note 1)
- Air cooled
- Semi F47 compliance
- Field upgradeable firmware
- Programmable slew rate
- Fast current slew rate up to 200 Hz
- Active power factor correction
- User defined command profiles

SAFETY

- UL 60950-1 2nd Edition; EN60950-1; IEC60950-1/EN60950
- CSA C22.2 No. 60950-1-07, 2nd Edition
- EN60601-1; IEC60601-1; IEC60601
- UL 60601-1 1st Edition; ANSI/AAMI ES60601-1 (2005 + C1:09 + A2:10) 3rd Ed
- CAN/CSA-C22.2 No. 60601-1 (2008)
- CB Certificate and Report
- CE (LVD+RoHS), EN60950-1

iHP24 Elec	trical Specificatio	ns				
Input Parameter	19" Rack 24 KW strapped as 3-phase 380/480 Vac Nominal (iHP24H3A)	19" Rack 24 KW strapped as 3-phase 208/240 Vac Nominal (iHP24L3A)	19" Rack 24 KW strapped as 3-phase 600 Vac Nominal (iHP24C3A)			
Input range	342 Vac to 528 Vac (Nominal rating 380/480 Vac)	187.5 Vac to 264 Vac (Nominal rating 208/240 Vac)	540 Vac to 660 Vac (Nominal rating 600 Vac)			
Number of phases	3-phase (Wye or Delta) 4 protective ea	` '	3-phase Wye 5 wire total (3-phases, neutral and protective earth ground)			
Frequency		47-63 Hz				
Phase detection		oss of phase will inhibit unit off ng/comms must continue with				
Max current/ phase	51 A @ 342 Vac 84 A @ 187.5 Vac 40 A @ 432 Vac		29 A @ 312 Vac			
Undervoltage detection	Nominal input locked on at turn-on. Undervoltage shutdown at 15% below nominal. Turn-on at 12% below nominal. Not to interfere with SEMI F47 specs.					
Current inrush		2.5 x Max input current				
Power factor	>	0.98 @ full load and nominal lin	ne			
Harmonic distortion	THD < 13%	THD < 13%, PWHD < 22% (refer to EN 61000-3-12)				
Line interruption	Designed to meet SE	MI F47-0706, 53, 58, S14 at n	ominal input voltages			
Input leakage current	< 2.5 mA (Note	for fixed condition 3rd edition le	eakage = 5 mA)			
Power switch	Fr	ont panel power switch provide	ed			
Input protection	In	ternal fuse (not user serviceable	e)			
Input overvoltage protection	Up to 115	Up to 115% of nominal input shall not damage unit				
Phase imbalance	≤ 5%					
Rack parallel		Up to 6 racks (144 KW)				
Efficiency	> 90% @ 3P 380 Vac full load > 91% @ 3P 480 Vac full load > 90% @ 3P 208 Vac 3P full > 90% @ 3P 600 Vac full load					
Standby voltage		5 V				
Standby regulation	4.75 - 5.25 V					
Standby max current	1 A					

Note 1: Analog 0-5 V or 0-10 V separate for voltage or current; Digital Ethernet UDP, RS485, CAN or Ethernet TC/IP with PowerPro Connect Module option. Command protocol is patterned to PMBus specification using a proprietary transaction protocol.



Safety Table	;			
Model Number	Model Code	Module Nominal Voltage	Safety Compliance	Maximum Total Voltage Allowed
73-936-0012	SL	≤ 48 V	Medical 2MOPP*	300 V
73-936-0024	SQ		Medical 2MOOP**, ITE	400 V
73-936-0048	SW			
73-936-0080	S8	> 80 V	Medical 2MOPP	600 V
73-936-0125	S1		Medical 2MOOP	800 V
73-936-0200	SA		Medical 2MOOP	800 V
73-936-0250	S2		ITE	1000 V
73-936-0250				

Note: * -2MOPP or 2 × MOPP (Means of Patient Protection) ** -2MOOP or 2 × MOOP (Means of Operator Protection)

iHP12 Electrical S	Specifications						
Input Parameter	19" Rack 12 KW strapped as 1-phase 200/220/230/240 Vac Nominal (iHP12L1A)	Type: 19" Rack 12 KW strapped as 3-phase 200/208/240 Vac Nominal (iHP12L3A)	Type: 19" Rack 12 KW strapped as 3-phase 380/480 Vac Nominal (iHP12H3A)				
Input range	180 Vac to 264 Vac (Nominal rating 200/220/230/240 Vac)	180 Vac to 264 Vac (Nominal rating 200/208/240 Vac)	342 Vac to 528 Vac (Nominal rating 380/480 Vac)				
Number of phases	1-phase 3-wire total (2-phase and 1 protective earth ground)	3-phase (Wye or Delta) 4-wire total (3-	-phase and 1 protective earth ground)				
Frequency		47-63 Hz					
Phase detection	NA	NA Loss of phase will inhibit unit off. Housekeeping/comms must continue with phase loss.					
Max current/phase	75 A @ 180 Vac	44 A @ 180 Vac 23 A @ 3 19 A @ 4					
Undervoltage detection	Nominal input locked on at turn-on. Undervoltage shutdown at 15% below nominal. Turn-on at 12% below nominal. Not to interfere with SEMI F47 specs.						
Current inrush		2.5 x Max input current					
Power factor	> 0.99 @ full load and nominal line	> 0.98 @ full load	and nominal line				
Harmonic distortion	THD	0 < 3.5%, PWHD < 22% (refer to EN 61000-3	-12)				
Line interruption	Designed to m	neet SEMI F47-0706, 53, 58, S14 at nominal	input voltages				
Input leakage current	< 1.2	5 mA	<2.5 mA				
Power switch		Front panel power switch provided					
Input protection		Internal fuse (not user serviceable)					
Input overvoltage protection	Up	to 115% of nominal input shall not damage u	unit				
Phase imbalance	NA	≤ 5%	≤ 5%				
Rack parallel		Up to 6 racks (72 KW)					
Efficiency	> 91% @ 1P 240 Vac full load						
Standby voltage		5 V					
Standby regulation		4.75 - 5.25 V					
Standby max current		1 A					

EMC/Immunity	
Parameter	All Models (Unless otherwise specified)
ESD	EN61000-4-2 (IEC1000-4-2)
Fast Transients	EN61000-4-4 (IEC1000-4-4)
Surge Immunity	EN61000-4-5 (IEC1000-4-5)
Conducted Immunity	EN61000-4-6 (IEC1000-4-6)
Radiated Immunity	EN61000-4-3 (IEC1000-4-3)
Power Frequency Magnetic Field	EN61000-4-8
Voltage Dips, Short Interruptions and Voltage Variations	EN 61000-4-34
Conducted Emission	EN55011, FCC CFR 47, Part 15, Subpart B
Radiated Emission	EN55011, FCC CFR 47, Part 15, Subpart B

Electromagnetic C	ompatibility/Input 1	Fransient		
Category	Standard	Frequency	Level/Limits	PSU Performance Criteria¹
Radiated Emissions ³	EN 55011/CISPR11	30 M - 1 GHz	Class A	5 dB Margin
	FCC CFR 47, Part 15, Subpart B	30 M - 1 GHz >1 GHz (see standard)	Class A	5 dB Margin
Conducted Emissions ³	EN 55011/CISPR11	150 k - 30 MHz	Class A	5 dB Margin
Power Line Harmonics ²	EN 61000-3-12	See standard	See standard	
Voltage Fluctuations ²	EN 61000-3-11	See standard	See standard	
Radiated Immunity	EN 61000-4-3	80 M - 2 GHz	10 V/meter	A
ESD	EN 61000-4-2		8 KV contact, 15 KV Air	A
Electrical Fast Transient	EN 61000-4-4		+/- 4 KV	А
Surge AC	EN 61000-4-5		2 KV DM, 2 KV CM	A
	IEEE C62.41		2 KV DM, 2 KV CM 6 KV, CM & DM	A Fail Safe
Conducted Susceptibility	EN 61000-4-6	150 KHz – 80 MHz	10 Vrms	A
Voltage Dips and Sags ²	EN 61000-4-34 SEMI F47	>95% reduction for >30% reduction for >95% reduction for 20% reduction for 30% reduction for 50% reduction for 60% reduction for	10 mS 500 mS 500 mS 5000 mS 500 mS 200 mS	A A C A A B

Notes:

¹ Performance Criteria as defined by EN 300 386 V1.3.3

² Applies to AC power supplies only.

³ Conducted and radiated emissions are measured using a typical set-up. In an actual end system, additional EMI filters may be required.

OUTPUT - Gene	OUTPUT – General Specs							
Parameter	Parameter Parame							
MODULE CODE	SL	SQ	ST	SW	S8	S1	SA	S2
# Outputs	1	1	1	1	1	1	1	1
Nominal O/P (V)	12.0 V	12.0 V 24.0 V 32.0 V 48.0 V 80.0 V 125.0 V 200.0 V 250.0						250.0 V
Max Power (W)	2400 W	2400 W						3000 W
O/P Current Range (A)	0.0 A - 200 A	0.0 A - 200 A 0.0 A - 120 A 0.0 A - 90 A 0.0 A - 62.5 A 0.0 A - 37.5 A 0.0 A -24 A 0.0 A - 15.0 A 0.0 A -12 A						0.0 A -12 A
Power Density (W/cu-in)	32.5	39.0	39.0	40.6	40.6	40.6	39	40.6
Efficiency (%)	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5
Module Input Voltage				400) V			
Module Operating Temp		-0 °C to +65 °C; Baseplate Temp TBD						
Series Operation	250 V modules can be connected in series up to 800 V for Medical and 1000 V for ITE							
Parallel Operation					k, with up to 6 rac be provided as pa		•	

OUTPUT - General Specs						
Parameter						
MODULE CODE	TW	T3				
# Outputs	1	1				
Nominal O/P (V)	50 V	300 V				
Max Power (W)	12000 W	12000 W				
O/P Current Range (A)	0 -270 A 0 -50 A					
Power Density (W/cu-in)	TBA TBA					
Efficiency (%)	93.2	94				
Module Input Voltage	395V ± 5V					
Module Operating Temp	0°C to +65°C					
Series Operation	No series operation offering					
Parallel Operation	Up to two (2) modules can be paralleled in one (1) rack, with up to six (6) racks connected in parallel. Single Wire Parallel connection will be provided as part of configuration.					

OUTPUT – Mod	OUTPUT – Module in Voltage Source Mode								
Voltage Source	oltage Source								
MODULE CODE	SL	SL SQ ST SW S8 S1 SA S2							
Nominal Output (V)	12	24	32	48	80	125	200	250	
Setting Range (V)	0.6 V - 14.4 V	1.2 V - 28.8 V	1.6 V - 38.4 V	2.4 V - 57.6 V	4.0 V - 96.0 V	6.25 V - 150.0 V	10.0 V - 240.0 V	12.5 V - 300.0 V	
Low Frequency RMS Ripple (mV)	24	48	64	96	160	250	500	500	
Line Regulation (mV)	12	24	32	48	80	125	200	250	
Load Regulation (mV)	24	24 48 64 96 160 250 400 50						500	
P-P Ripple (mV)	60	60 120 160 240 400 625 1250 1						1250	
Drift (Temp Stability)		±0.05% of	f lout Rated over	8 hours, after 30) minute warm uj	o, constant Line, Lo	oad and Temp		
Temp Coefficient (PPM/°C)		200							
Pgm Accuracy (mV)		Digita	al: 0.1% of Nomi	nal Output Voltaç	ge; Analog: 1.0%	of Nominal Outpu	t Voltage		
Pgm Resolution (mV)		SL=TBD; SQ=1; SW=2; S8=8; S1=6; S2=21							
Meas Accuracy (mV)	0.2% + 0.2% of Nominal Output Voltage								
Meas Resolution		SL=TBD; SQ=1; SW=2; S8=8; S1=6; S2=21							
Transient Response		Max 5.0% deviation from current set point must recover within 1mS for a 50% step load.							
Current Sense Method		lı .	nternal Shunt; Ex	ternal Shunt can	be used for bett	er temperature sta	bility.		

OUTPUT – Module in Voltage Source Mode						
Voltage Source						
MODULE CODE	TW T3					
Nominal Output (V)	50	300				
Setting Range (V)	2.5 -60	15.0 -360				
Low Frequency RMS Ripple (mV)	100 600					
Line Regulation (mV)	50 300					
Load Regulation (mV)	100 600					
P-P Ripple (mV)	250 1500					
Drift (Temp Stability)	±0.05% of Vout rated over 8 hours, constant line and load.					
Temp Coefficient (PPM/°C)	200					
Pgm Accuracy (mV)	Digital: 0.1% of Nominal Output Voltage /	Analog: 1.0% of Nominal Output Voltage				
Pgm Resolution (mV)	2	TBA				
Meas Accuracy (mV)	0.2% of Set Output + 0.2% of Nominal Output Voltage					
Meas Resolution	TBA					
Transient Response	Recovery time of 1mS (See Section 5.4.2 for the transient conditions)					
Current Sense Method						

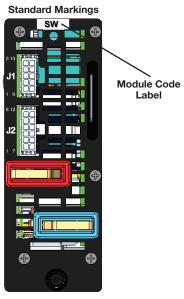
OUTPUT – Module in Current Source Mode								
Current Source - Prog	Current Source - Programmable load compensation available for resistive and inductive loads; capacitive load applications; and							
LED drive applications	5							
MODULE CODE	SL	SQ	SW	S8	S1	SA	S2	
Nominal Output (V)	12	24	48	80	125	200	250	
Setting Range (A)	0.0 A - 200 A	0.0 A - 120 A	0.0 A - 62.5 A	0.0 A - 37.5 A	0.0 A - 24 A	0.0 A - 15 A	0.0 A - 12 A	
RMS Ripple (mA)	200	200 120 62.5 37.5 24 15 1						
Line Regulation (mA)	200	200 120 125 93.75 48 50						
Load Regulation (mA)	800	800 480 250 150 96 56 48						
P-P Ripple (mA)		N/A						
Drift (Temp Stability)		±0.05% of I _{out} Ra	ted over 8 hours, af	ter 30 minute warn	n up, constant Line	Load and Temp		
Temp Co-efficient (PPM/°C)		SL, SQ = 300 PPM; All other modules are 200 PPM. Temp Co-efficient at rack level is [Temp Co-efficient (module level)] + [4500 PPM of lout-max]						
Pgm Accuracy (A)			0.7% digital, 1	.3% analog of rate	d output max			
Pgm Resolution (mA)	79.2	26.4	13.2	10	5.2	2.6	2.6	
Meas Accuracy	0.7% + 0.7% of Rated Output Max							
Meas Resolution	79.2	26.4	13.2	10	5.2	2.6	2.6	
Transient Response		0-63% output	t current change in 1	7.5 mSec, residual	value 1%, settling t	ime 35 mSec		
Current Sense Method			Interna	al Shunt / External :	Shunt			

OUTPUT – Module in Current Source Mode						
Current Source -Programmable lo drive applications	oad compensation available for resistive and induc	ctive loads; capacitive load applications; and LED				
MODULE CODE	TW	T3				
Nominal Output (V)	50	300				
Setting Range (A)	0 -270	0 -50				
RMS Ripple (mA)	270	50				
*Line Regulation (mA)	270 100					
*Load Regulation (mA)	1200 200					
Pgm Resolution (mA)	20 TBA					
Meas Resolution (mA)	TBA	TBA				
*Pgm Accuracy (A)	Digital: 0.7% of Rated Output Max / Analog: 1.3% of Rated Output Max (1% to 100% O/P Current adjustability)					
*Meas Accuracy	0.7% + 0.7% of R	ated Output Max				
*Drift (Temp Stability)	±0.05% of lout-max over 8 h	±0.05% of lout-max over 8 hours, constant line and load.				
Temp Coefficient – Module Level (PPM of lout-max / °C)	300	300				
Temp Coefficient - Rack Level	[Temp Coefficient (module level)] + [4500ppm of lout-max]					
Current Overshoot-Undershoot	+/- 5% of lout-max (See Section 5.4.2 for the transient conditions)					
**Transient Response Time	Recovery time of 35mS (See Section 5.4.2 for the transient conditions)					
Current Sense Method	Internal	Shunt				

Environmental Specification	ations
Operating Conditions	ALL MODELS (Unless Otherwise Specified)
Operating Temperature	0 °C to +50 °C at 100% rated load.
Storage Temperature	-40 °C to +85 °C. For Liquid Cooled models, liquid must be drained before storage
Operating Humidity	20% - 90% non condensing
Storage Humidity	10% - 95% non condensing
Operating Altitude	Up to 9,842 feet above sea level (3,000 meters)
Storage Altitude	Up to 30,000 feet above sea level (9,144 meters)
Vibration	Operating Sinusoidal Vibration MIL-STD-810G Method 528 Procedure I (Type 1): NEBS Office Vibration Environment, Alternate Procedure Operating Random Vibration: IPC-9592B Class 1 Non-Operating Vibration (Packaged): IPC-9592B Class 1; MIL-STD-810G, Method 514.6, Procedure 1, Category 7, Table 514.6C-VII General Exposure
Shock	MIL-STD-810G Method 516.6 Procedures I, II, IV, VI
Shipping and Handling	NSTA for <100 lbs; MIL-STD-2073-1 >100 lbs
Cooling and Audible Noise	<65 dBA with 80% load @ 30 °C at nominal input voltage with Smart Fan algorithm to be optimized based on module and rack thermal sensors. When modules are inhibited via software control, the fan speed is reduced to idle and acoustic noise is <46 dBA. With modules off via front panel switch fans are at idle for 1 min, and off for 9 min.
Ingress Protection	Fan Cooled = IP20
Pollution Degree	2
RoHS Compliance	Yes







CASE CODE MODULE CODE PARALLEL/SERIES CASE CODE CONF CODE MOD CODE	Ordering Information							
Case Becoder IHP**XYA Decoder XVZ First Digit Second Digit Blank = Ship as a kit Factory Assigned X = Case Power X = Output Type 0 = None 0 = None C = Ship Configured Any other Alpha Character = Special set-up configuration X = Voltage Range V = Nominal Voltage 3 = Slot 18.4			PARALLEL/SERIES CASE CODE		CONF CODE	MOD CODE		
Decoder NFP XYA Decoder XV2			->	(YZ* (x4/x8)			-X	-XXX
12 = 12 kW 19" Rack S = Single OP (1 Slot) 24 = 24 kW 19" Rack T = Single OP (1 Slot) 24 = 24 kW 19" Rack T = Single OP (3 Slot) 24 = 24 kW 19" Rack T = Single OP (3 Slot) 24 = 24 kW 19" Rack T = Single OP (3 Slot) 24 = 24 kW 19" Rack T = Single OP (3 Slot) 24 = 24 kW 19" Rack T = Single OP (3 Slot) 25 = Slot 384		iHP**XYA		XVZ	First Digit	Second Digit	Blank = Ship as a kit	
24 = 24 KW 19* Rack	** = Case Po	ower	X = Output	Туре	0 = None	0 = None	C = Ship Configured	
24 = 24 KW 19" Rack 248 = 24 kW 19" Rack Short T = Single O/P (3-Slot) 2 = Slot 283 S = Series Special set-up configuration X = Voltage Range V = Nominal Voltage 3 = Slot 384 1 = Combo 2 P/S		12 = 12 KW 19" Rack		S = Single O/P (1-Slot)	1 - Slot 182	P – Parallel	, ,	
X = Voltage Range		24 = 24 KW 19" Rack					Special set-up configuration	
L = Low Range*180-264		24S = 24KW 19" Rack Short		T = Single O/P (3-Slot)			-	
H = High Range 342-528	X = Voltage F	Range	V = Nominal Voltage					
C = Canadian 540-660		L = Low Range*180-264		A = 200V			-	
Y = Input Phase		H = High Range 342-528		B = Future				
1 = Single Phase		C = Canadian 540-660		C = Future		4 = Combo 3 P/S/P		
S	Y = Input Ph	ase		D = Future		5 = Combo 3 P/S/S		
Z = Cooling		1 = Single Phase		L = 12 V	8 = Slot 1,2&3	6 = Combo 3 S/P/P		
A = Air Cooled W = 48 V B = Slot 1,2,3,4,586 9 = Combo 4 P/P/P/S C = Slot 1,2,3,4,5,687 A = Combo 4 P/P/P/S A = Accessory Options 1 = 125 V D = Slot 1,2,3,4,5,687 A = Combo 4 P/P/S/P Blank = Full control 2 = 250 V E = Slot 182; 384 C = Combo 4 P/P/P/S 1 - 9 = Future 3 = 300 V (12 kW ONLY) 5 = 500 V (12 kW ONLY) 9 = 825 V (12 kW ONLY) Z=Mode Blank = Standard P = Precision * L = Slot 1,2,3,4,5,687 B = Combo 4 P/S/P/P E = Slot 1,2,3,4,5,687 B = Combo 4 P/S/S/P E = Combo 4 P/S/S/P M = Slot 1,2,3,4,5,687 M = Combo 4 P/P/P/S K = Slot 1,2,3,4,5,687 M = Combo 4 S/P/P/P M = Slot 1,2,3,4,5,687 M = Combo 4 S/P/P/P N = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/S/S/P M = Slot 1,2,3,4,5,6,7,88 K = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/S/S/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 M = Combo 4 S/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P/P M = Slot 1,2,3,4,5,6,7,88 E = Combo 4 P/P/P/P/P M = Slot 1,2,3,4,5,6,7,88 M = Combo 4 S/P/P/P N = Slot 1,2,3,4,5,6,7,88 N = Combo 4 S/P/P/P E = Slot 1,2,3,4,5,6,7,88 N = Slot 1,2,3,4,5,6,7,88 U =		3 = 3-Phase		Q = 24 V	9 = Slot 1,2,3&4	7 = Combo 3 S/P/S		
S	Z = Cooling			T = 32 V	A = Slot 1,2,3,4&5	8 = Combo 3 S/S/P		
A = Accessory Options 1 = 125 V Blank = Full control 2 = 250 V F = Slot 182; 384 C = Combo 4 P/P/S/S E = Slot 182; 384; 586 D = Combo 4 P/S/P/P F = Slot 182; 384; 586 D = Combo 4 P/S/P/P F = Slot 182; 384; 586; 788 E = Combo 4 P/S/P/P F = Slot 182; 384; 586; 788 E = Combo 4 P/S/P/S G = Slot 182; 384; 586; 788 E = Combo 4 P/S/S/P F = Slot 182; 384; 586; 788 E = Combo 4 P/S/S/P H = Slot 1,283; 485; 687 G = Combo 4 S/P/P/P H = Slot 1,283; 485; 687 G = Combo 4 S/P/P/P L = Slot 1,283; 4,586 H = Combo 4 S/P/P/P H = Slot 1,283; 4,586; 788 F = Combo 4 S/P/P/P L = Slot 1,283; 4,586; 788 H = Combo 4 S/P/P/P H = Slot 1,283; 4,586; 788 L = Combo 4 S/P/S/P P = Slot 1,2,384; 586; 788 L = Combo 4 S/P/S/P P = Slot 1,2,384; 5.687 M = Combo 4 S/S/P/P P = Slot 1,2,384; 5.687 M = Combo 4 S/S/P/P P = Slot 1,2,384; 5.687 M = Combo 4 S/S/P/P P = Slot 1,2,384; 5.687 M = Combo 4 S/S/P/P P = Slot 1,2,384; 5.687 M = Combo 4 S/S/P/P P = Slot 1,2,3,485; 6.788 U = S		A = Air Cooled		W = 48 V	B = Slot 1,2,3,4,5&6	9 = Combo 4 P/P/P/S		
Blank = Full control 2 = 250 V E = Slot 1&2; 3&4 C = Combo 4 P/S/P/P 1-9 = Future				8 = 80 V	C = Slot 1,2,3,4,5,6&7	A = Combo 4 P/P/S/P		
Blank = Full control 2 = 250 V E = Slot 182; 384 C = Combo 4 P/S/P/P 1-9 = Future 3 = 300 V (12 KW ONLY) F = Slot 182; 384; 586 D = Combo 4 P/S/F/S 5 = 500 V (12 KW ONLY) H = Slot 1,283; 485 F = Combo 4 P/S/S/P 6 = Slot 182; 384; 586; 788 E = Combo 4 P/S/S/P 7 = Slot 1,283; 485 F = Combo 4 P/S/S/S 8 = Slot 1,238; 485; 687 G = Combo 4 S/P/P/P 9 = 825 V (12 KW ONLY) 2 = Mode Blank = Standard P = Precision N = Slot 1,2384; 586; 788 J = Combo 4 S/P/S/P 8 = Slot 1,2,384; 586; 788 J = Combo 4 S/P/S/P 9 = Slot 1,2,384; 586; 788 L = Combo 4 S/P/P/P 9 = Slot 1,2,384; 586; 788 L = Combo 4 S/S/P/P 9 = Slot 1,2,384; 586; 788 L = Combo 4 S/S/P/P 9 = Slot 1,2,384; 586; 788 L = Combo 4 S/S/P/P 9 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 1 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 1 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 1 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 1 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 2 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 3 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 3 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 4 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot 1,2,3,485; 687 M = Combo 4 S/S/P/P 5 = Slot	A = Accesso	ory Options		1 = 125 V	D = Slot 1,2,3,4,5,6,7&8	B = Combo 4 P/P/S/S		
1-9 = Future		, ,			E = Slot 1&2; 3&4	C = Combo 4 P/S/P/P		
(12 KW ONLY) G = Slot 182; 384; 586; 788					F = Slot 1&2; 3&4; 5&6	D = Combo 4 P/S/P/S		
(12 KW ONLY) 9 = 825 V (12 KW ONLY) Z=Mode Blank = Standard P = Precision Signature February Februa		i e = rateire		(12 KW ONLY) 5 = 500 V	G = Slot 1&2; 3&4; 5&6; 7&8	E = Combo 4 P/S/S/P		
9 = 825 V (12 KW ONLY)					H = Slot 1,2&3; 4&5	F = Combo 4 P/S/S/S		
Combo 4 S/P/S/P					J = Slot 1,2&3; 4&5; 6&7	G = Combo 4 S/P/P/P		
Z=Mode Blank = Standard M = Slot 1,2,3&4; 5&6 K = Combo 4 S/P/S/P M = Slot 1,2,3&4; 5&6; 7&8 L = Combo 4 S/S/P/P P = Slot 1,2,3&4; 5,6&7 M = Combo 4 S/S/P/S R = Slot 1,2,3&4; 5,6,7&8 N = Combo 4 S/S/P/S R = Slot 1,2,3&4; 5,6,7&8 N = Combo 4 S/S/P/S R = Slot 1,2,3&4; 5,6,7&8 N = Combo 4 S/S/P/S R = Slot 1,2,3,4&5; 6&7 T = Slot 1,2,3,4&5; 6,7&8 U = Slot 1,2,3,4,5&6; 7&8 U = Slot 1,2,3,4,5&6; 7&8 Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code					K = Slot 1,2&3; 4,5&6	H = Combo 4 S/P/P/S		
M = Slot 1,2,3&4; 5&6				-	L = Slot 1,2&3; 4,5&6; 7&8	J = Combo 4 S/P/S/P		
N = Slot 1,2,3&4; 5&6; 7&8			Z=Mode		M = Slot 1,2,3&4; 5&6	K = Combo 4 S/P/S/S		
R = Slot 1,2,3&4; 5,6,7&8 N = Combo 4 S/S/S/P S = Slot 1,2,3,4&5; 6&7 T = Slot 1,2,3,4&5; 6,7&8 U = Slot 1,2,3,4,5&6; 7&8 U = Slot 1,2,3,4,5&6; 7&8 Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code				P = Precision	N = Slot 1,2,3&4; 5&6; 7&8	L = Combo 4 S/S/P/P		
S = Slot 1,2,3,4&5; 6&7 T = Slot 1,2,3,4&5; 6,7&8 U = Slot 1,2,3,4,5&6; 7&8 Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code					P = Slot 1,2,3&4; 5,6&7	M = Combo 4 S/S/P/S		
T = Slot 1,2,3,4&5; 6,7&8 U = Slot 1,2,3,4,5&6; 7&8 Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code					R = Slot 1,2,3&4; 5,6,7&8	N = Combo 4 S/S/S/P		
*Lowest possible input for the 24 kW version is 187.5 Vac U = Slot 1,2,3,4,5&6; 7&8 Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code					S = Slot 1,2,3,4&5; 6&7		J	
*Lowest possible input for the 24 kW version is 187.5 Vac *Lowest possible input for the 24 kW version is 187.5 Vac *Lowest possible input for the 24 kW version is 187.5 Vac *Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code						-		
*Lowest possible input for the 24 kW version is 187.5 Vac Z=Special Defined by MOD Code -** is allowed for secondary series/parallel code								
-** is allowed for secondary series/parallel code	*Lowest poss	Lowest possible input for the 24 kW Version is 167.5 vac			Z=Special Defined by MOD			
						series/parallel code]	
1 Stocker total						· · · · · · · · · · · · · · · · · · ·		
8 = Groups 1,2&3								
9 = Groups 1,2,3&4				1 /				
E = Groups 1&2; 3&4					·			

MODEL NUMBER SHORTCUT

For repeated like modules in parallel or series, instead of listing all the same modules separated by a "-", you can simply list the module once and then follow by the number of times it repeats enclosed in parenthesis.

For example: iHP24H3A-SW-SW-SW-SW-SW-SW-S8-S8-00

would become: iHP24H3A-SW(6)-S8(2)-00

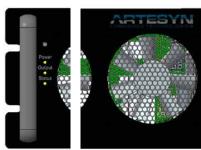
Part Number Information						
Rack/Module	Description	Status				
	RACK					
73-958-0001	19" 12KW Case High Line 3-Phase Air (iHP12H3A)	Released				
73-958-0001L	19" 12KW Case Low Line 3-Phase Air (iHP12L3A)	Released				
73-958-0001S	19" 12KW Case Low Line 1-Phase Air (iHP12L1A)	Released				
73-959-0001	19" 24KW Case High Line 3-Phase Air (iHP24H3A)	Released				
73-959-0001L	19" 24KW Case Low Line 3-Phase Air (iHP24L3A)	Released				
73-959-0001Z	19" 24KW Case 600V Canadian 3-Ph Y Air (iHP24C3A)	Released				
73-969-0001	19" 24KW SHORT Case High Line 3-Phase Air (iHP24SH3A)	Coming Soon				
73-969-0001L	19" 24KW SHORT Case Low Line 3-Phase Air (iHP24SL3A)	Coming Soon				
	3KW MODULES					
73-936-0012	12V 2400W Output Module (SL)	Released				
73-936-0024	24V 2880W Output Module (SQ)	Released				
73-936-0032	32V 3000W Output Module (ST)	Released				
73-936-0048	48V 3000W Output Module (SW)	Released				
73-936-0080	80V 3000W Output Module (S8)	Released				
73-936-0125	125V 3000W Output Module (S1)	Released				
73-936-0200	200V 3000W Output Module (SA)	Released				
73-936-0250	250V 3000W Output Module (S2)	Released				
	12KW MODULES					
73-938-0050	50V 12000W Output Module (TW)	Released				
73-938-0300	300V 12000W Output Module (T3)	Coming Soon				
	ACCESSORIES					
73-778-000A	PPCM (PowerPro Connect Module) Kit	Released				
73-778-001	3-Phase Low Line Config Kit	Released				
73-778-002	1 Phase Low Line Config Kit	Released				
73-778-003	Module Accessory Kit	Released				
73-778-004	2X Parallel Module Accessory Kit	Released				
73-778-005	3X Parallel Module Accessory Kit	Released				
73-778-006	4X Parallel Module Accessory Kit	Released				
73-778-007	5X Parallel Module Accessory Kit	Released				
73-778-008	6X Parallel Module Accessory Kit	Released				
73-778-009	7X Parallel Module Accessory Kit	Released				
73-778-010	8X Parallel Module Accessory Kit	Released				
73-778-011	Initial Series Module Accessory Kit	Released				
73-778-012	Subsequent Series Module Accessory Kit	Released				
73-778-013	CAN/RS485 Terminator	Released				
73-778-016	3-Phase High Line Config Kit	Released				
73-778-022	Blank Panel 73-778-022	Released				
73-778-023	iHP12 Isocomm board	Released				
73-778-024	iHP24 Isocomm board	Released				
73-778-026 73-778-027	iHP24 Cover Kit iHP12 Cover Kit	Released Released				
73-778-027	iHP 8X IPROG Cable Assembly	Released				
73-778-030	iHP 4X IPROG Cable Assembly	Released				
73-778-030	iHP 4X IPROG Cable Assembly	Released				

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Model	Weight
73-959-0001 iHP24	36.0 KG
73-959-0001Z iHP24C	35.0 KG
73-958-0001 iHP12	22.2 KG
73-936-0012 Module 3KW	2.2 KG
All other 3KW Module	2.0 KG
73-938-0050 Module 12KW	5.95 KG

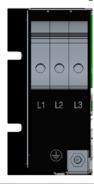
Case Specs - Outline Detail

Front Panel Standard Markings (Standard for both 12 KW and 24 KW)





Input and Comms Standard Markings
View of iHP24L/H and iHP12L/H shown on top, iHP24C sown on bottom. Comms interface is horizontal on the iHP12L/H. See mechanical drawings for more details.







Module Specs - Outline Detail

Module J1 Signals					
Pin #	Function	Function	Pin #		
5	4-20mA_IPROG	SYS_M_FAULT#	10		
4	0-5V_IPROG	SYS_M_ENABLE#	9		
3	0-10V_IPROG	SYS_RTN	8		
2	0-5V_VPROG	SYS_M_INHIBIT	7		
1	0-10V_VPROG	4-20mA_VPROG	6		

Module J2 Signals					
Pin #	Function	Function	Pin #		
6	NOT CONNECTED	ISHARE	12		
5	IMON	VMON	11		
4	D_RTN	ISHARE	10		
3	EXT_ISENSE+	EXT_ISENSE-	9		
2	D_RTN	V_SNS-	8		
1	V_SNS+	D_RTN	7		

J1 mating housing Molex Micro-fit MPN: 43025-1000 J2 mating housing Molex Micro-fit MPN: 43025-1200

Crimp Terminal AWG 20-24

Crimp Terminal Molex MPN: 43030-0002

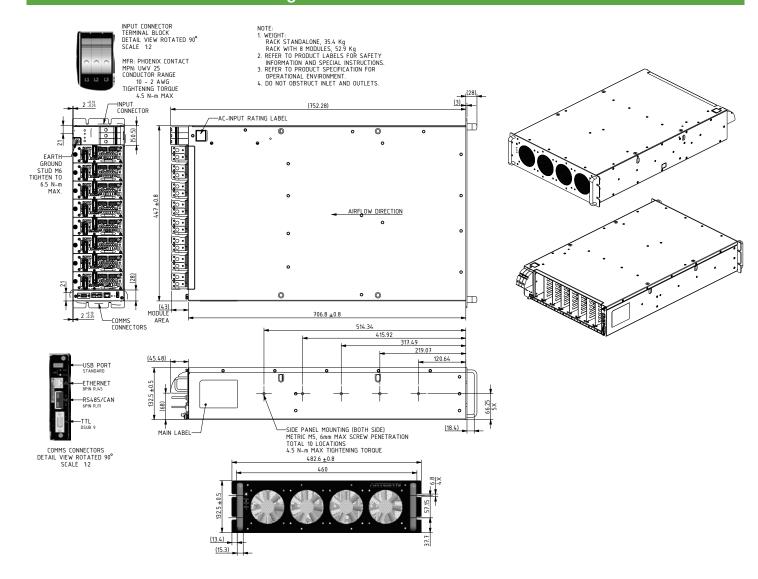




	Condition	POWER LED	OUTPUT LED	SYSTEM STATUS LED
	No AC	OFF	OFF	OFF
	ISOCOM Start-Up Boot Load	BLINKING GREEN	OFF	OFF
	SLEEP Mode (ON/OFF switch)	AMBER	OFF	OFF
	Global Inhibit	SOLID GREEN	BLINKING GREEN	OFF
,	AC GOOD	SOLID GREEN	X	X
8	AC FAULT (OV, UV)	SOLID RED	OFF	SOLID RED
	Output GOOD	SOLID GREEN	SOLID GREEN	SOLID GREEN
	Auto-recoverable Fault (OTP)	SOLID GREEN	OFF	SOLID AMBER
	Latching Fault (OVP, UVP) or Internal Fault	SOLID GREEN	OFF	SOLID RED
á	FAN FAIL	SOLID GREEN	OFF	BLINKING RED
	BOOTLOADING	X	OFF	BLINKING AMBER
	AND DESCRIPTION OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUM	And in case of the last of the		

i HP24 Series - Mechanical Drawings

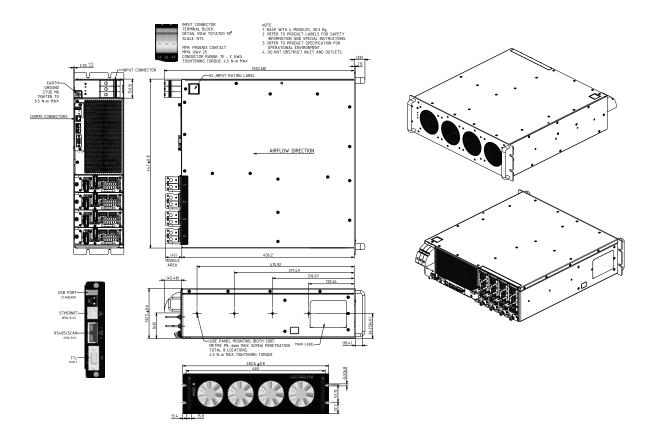
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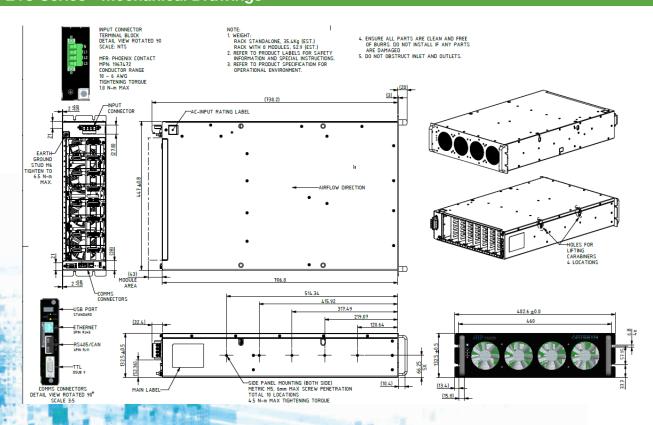


i HP12 Series - Mechanical Drawings

In the In

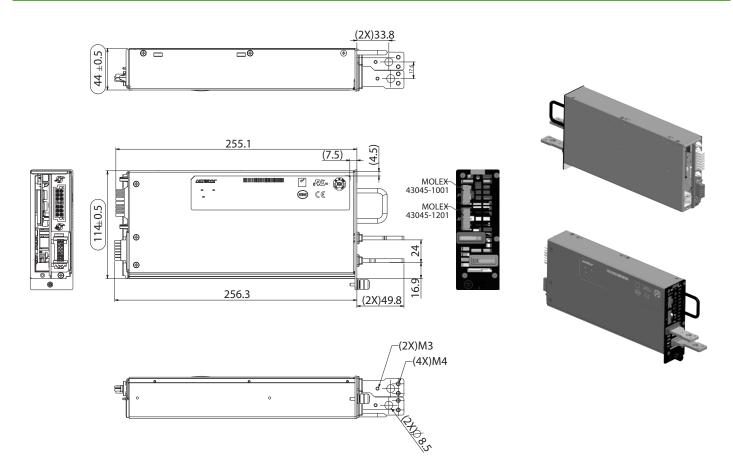


i HP24C Series - Mechanical Drawings



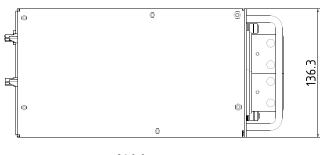
i HP Modules - Mechanical Drawings

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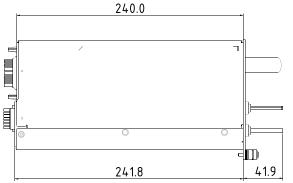


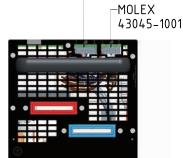


12KW Modules - Mechanical Drawings

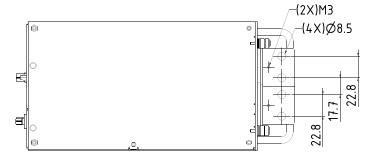








-MOLEX 43045-1201



PowerPro Connect Module



P@WERPRO

Part number:73-778-000A

The PowerPro Connect Module (purchased separately) can provide standard Ethernet interface via the internet to a cloud- and dashboard-based user-configurable GUI.

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