

Description

The Modular Power System II supplies 5 VDC, 15 VDC, -15 VDC, 24 VDC, 48 VDC, and 125 VDC power to Harmony components of the Symphony Enterprise Management and Control System. The power system provides the operating voltages to Harmony I/O blocks, and Harmony rack I/O, controller, and communications modules as well as power to operate field devices. The power system accepts 120 VAC, 240 VAC, or 125 VDC input power.

The Modular Power System II consists of the following components:

- Chassis:
 - IPCHS01 Power Module Chassis (supports Harmony rack modules only).
 - IPCHS02 Power Module Chassis (supports both Harmony blocks and rack modules).
 - IPFCH01 Power Fan Chassis.

- Power entry:
 - IPECB11 Power Entry Circuit Breaker (AC).
 - IPECB13 Power Entry Circuit Breaker (DC).
 - IPESW11 Power Entry Switch (AC).
 - IPESW13 Power Entry Switch (DC).

- Modules:
 - IPBLC01 Harmony Power (24 VDC).
 - IPFLD01 Field Power (24 VDC).
 - IPFLD24 Field Power (24 VDC).
 - IPFLD48 Field Power (48 VDC).
 - IPFLD125 Field Power (125 VDC).
 - IPMON01 Power Monitor Module.
 - IPSYS01 System Power (5 VDC, 15 VDC, -15 VDC, 24 VDC).

- System fan:
 - IPFAN14 Power System Fan (120/240 VAC, 125 VDC).

Power Module Usage by System

Power Module	Harmony Block I/O	Harmony Rack I/O
IPBLC01	•	
IPFLD01		•
IPFLD24	•	•
IPFLD48	•	•
IPFLD125	•	•
IPSYS01		•

Related Documents

Number	Document Title
WBPEEUS210505?0	Harmony Modular Power System II, Overview

Specifications

Property	Characteristic/Value												
General													
Power input Voltage	<table border="1"> <thead> <tr> <th rowspan="2">External Ambient Temp.</th> <th colspan="2">Input Voltage</th> </tr> <tr> <th>Nominal</th> <th>Operating Range</th> </tr> </thead> <tbody> <tr> <td rowspan="3">0° to 55°C (32° to 131°F)</td> <td>120 VAC</td> <td>102 to 132 VAC</td> </tr> <tr> <td>240 VAC</td> <td>204 to 264 VAC</td> </tr> <tr> <td>125 VDC</td> <td>102 to 144 VDC</td> </tr> </tbody> </table>	External Ambient Temp.	Input Voltage		Nominal	Operating Range	0° to 55°C (32° to 131°F)	120 VAC	102 to 132 VAC	240 VAC	204 to 264 VAC	125 VDC	102 to 144 VDC
External Ambient Temp.	Input Voltage												
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0° to 55°C (32° to 131°F)	120 VAC	102 to 132 VAC											
	240 VAC	204 to 264 VAC											
	125 VDC	102 to 144 VDC											
Current	20 A maximum per side												
Peak inrush current	15 A per power module for 100 msec maximum for AC or DC input power												
Frequency	47 to 63 Hz												
Total harmonic distortion	Less than 5%												
Efficiency	60% at full rated load												
Power factor	Actively corrected to 0.95 minimum at input currents greater than 0.5 A												
Power module chassis	IPCHS01, IPCHS02												
Input power capacity	20 A maximum per side												
Output bus capacity	85 A at 5.1 VDC maximum 15 A at ±15.1 VDC maximum 85 A at 25.5 VDC maximum 12 A at 49.1 VDC maximum 12 A at 125.6 VDC maximum												
IPCHS02 Harmony power connector rating	Approximately 7 A												
Power entry circuit breaker	IPECB11, IPECB13												

Property	Characteristic/Value																																																																											
Power entry switch Input voltage IPECB11, IPEWS11 IPECB13, IPEWS13 Input current Voltage drop across breaker/ switch	IPEWS11, IPEWS13 102 to 264 VAC 102 to 144 VDC 20 A maximum 2 V drop at 20 A nominal																																																																											
System fan Input power Frequency	IPFAN14 0.72 A nominal at 120 VAC 0.42 A nominal at 240 VAC 0.50 A at nominal 125 VDC 47 to 63 Hz																																																																											
Weight and dimensions	<table border="1"> <thead> <tr> <th>Module¹</th> <th>Weight kg (lb)</th> <th>Height mm (in.)</th> <th>Width mm (in.)</th> <th>Depth² mm (in.)</th> </tr> </thead> <tbody> <tr> <td>IPBLC01</td> <td>2.49 (5.46)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>440.50 (17.50)</td> </tr> <tr> <td>IPBLK01</td> <td>0.89 (1.95)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPFLD01</td> <td>2.36 (5.20)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPFLD24</td> <td>2.49 (5.46)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPFLD48</td> <td>2.55 (5.62)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPFLD125</td> <td>2.55 (5.62)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPMON01</td> <td>0.71 (1.56)</td> <td>218.40 (8.60)</td> <td>35.56 (1.40)</td> <td>401.32 (15.80)</td> </tr> <tr> <td>IPSYS01</td> <td>2.55 (5.60)</td> <td>218.40 (8.60)</td> <td>48.30 (1.90)</td> <td>444.50 (17.50)</td> </tr> </tbody> </table> <p>NOTES: 1. The total system weight is 48 kg (106 lb) maximum. 2. Dimension includes the handle.</p> <table border="1"> <thead> <tr> <th>Component¹</th> <th>Weight kg (lb)</th> <th>Height mm (in.)</th> <th>Width mm (in.)</th> <th>Depth mm (in.)</th> </tr> </thead> <tbody> <tr> <td>IPCHS01/02</td> <td>7.55 (16.60)</td> <td>223.50 (8.80)</td> <td>482.60 (19.00)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPECB11/13</td> <td>2.55 (5.60)</td> <td>114.30 (4.50)</td> <td>193.04 (7.60)</td> <td>162.56 (6.40)</td> </tr> <tr> <td>IPESW11/13</td> <td>2.55 (5.60)</td> <td>114.30 (4.50)</td> <td>193.04 (7.60)</td> <td>162.56 (6.40)</td> </tr> <tr> <td>IPFAN14</td> <td>3.23 (7.10)</td> <td>152.40 (6.00)</td> <td>210.82 (8.30)</td> <td>444.50 (17.50)</td> </tr> <tr> <td>IPFCH01</td> <td>10.20 (22.40)</td> <td>203.20 (8.00)</td> <td>482.60 (19.00)</td> <td>472.44 (18.60)</td> </tr> </tbody> </table> <p>NOTE: 1. The total system weight is 48 kg (106 lb) maximum.</p>	Module ¹	Weight kg (lb)	Height mm (in.)	Width mm (in.)	Depth ² mm (in.)	IPBLC01	2.49 (5.46)	218.40 (8.60)	48.30 (1.90)	440.50 (17.50)	IPBLK01	0.89 (1.95)	218.40 (8.60)	48.30 (1.90)	444.50 (17.50)	IPFLD01	2.36 (5.20)	218.40 (8.60)	48.30 (1.90)	444.50 (17.50)	IPFLD24	2.49 (5.46)	218.40 (8.60)	48.30 (1.90)	444.50 (17.50)	IPFLD48	2.55 (5.62)	218.40 (8.60)	48.30 (1.90)	444.50 (17.50)	IPFLD125	2.55 (5.62)	218.40 (8.60)	48.30 (1.90)	444.50 (17.50)	IPMON01	0.71 (1.56)	218.40 (8.60)	35.56 (1.40)	401.32 (15.80)	IPSYS01	2.55 (5.60)	218.40 (8.60)	48.30 (1.90)	444.50 (17.50)	Component ¹	Weight kg (lb)	Height mm (in.)	Width mm (in.)	Depth mm (in.)	IPCHS01/02	7.55 (16.60)	223.50 (8.80)	482.60 (19.00)	444.50 (17.50)	IPECB11/13	2.55 (5.60)	114.30 (4.50)	193.04 (7.60)	162.56 (6.40)	IPESW11/13	2.55 (5.60)	114.30 (4.50)	193.04 (7.60)	162.56 (6.40)	IPFAN14	3.23 (7.10)	152.40 (6.00)	210.82 (8.30)	444.50 (17.50)	IPFCH01	10.20 (22.40)	203.20 (8.00)	482.60 (19.00)	472.44 (18.60)
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Electromagnetic/radio frequency interference	Meets IEC 801.3, level 3, 80 MHz to 1 GHz with no loss of function or false status information for all units. NOTE: Do not use RFI sources producing 10 V/m or greater at 84.9 MHz within 2.2 m (7.2 ft) of the MPS II system.																																																																											
Fast transient/burst susceptibility	Meets IEC 801.4, level 3, mains 2 kV at 2.5 kHz, outputs 1 kV at 5.0 kHz with no loss of function or false status information.																																																																											
Transient surge	Meets IEC 801.5, level 3, 2 kV with no loss of function or false status information.																																																																											

Property	Characteristic/Value																																																				
Electrostatic discharge	Meets IEC 801.2, level 3 with no loss of function or false status information.																																																				
Environmental																																																					
Temperature																																																					
Operating enclosure (internal)	0° to 70°C (32° to 158°F)																																																				
Operating enclosure (external)	0° to 55°C (32° to 131°F)																																																				
Storage and transport	(-40° to 85°C (-40° to 185°F)																																																				
Relative humidity																																																					
Operating	20% to 90% up to 55°C (131°F) noncondensing 20% to 45% at 55° to 70°C (131° to 158°F) noncondensing																																																				
Altitude																																																					
Operating	Sea level to 3,048 m (10,000 ft)																																																				
Storage and transport	Up to 9,144 m (30,000 ft)																																																				
Air quality	Noncorrosive per ISA S71.04 class LA, LB, LC severity level 1																																																				
Overvoltage category	IEC 1010-1 Category III, for mains Category II, for mains to the IPCHS01 and IPCHS02 chassis Category I, for outputs																																																				
Vibration	13.2 to 100 Hz, 0.7 Gs 2 to 13.2 Hz, 12 mm (0.47 in.) peak-to-peak displacement																																																				
Certifications																																																					
Canadian Standards Association (CSA)	Certified for use as process control equipment in an ordinary (nonhazardous) location.																																																				
Factory Mutual (FM)	Approval for the following categories: Nonincendive for Class I Division 2, Groups A,B,C,D																																																				
IPBLC01, IPFLD01, IPFLD24, IPFLD48, IPFLD125, IPSYS01																																																					
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Full load (A)	17.00	1.80	1.80	5.60	5.60/11.2 ²	5.45	2.3																																														

Property	Characteristic/Value																																												
Load sharing	Current shared equally between modules within 5% (highest current load to lowest current load) at full load																																												
Line regulation	$\pm 0.5\%$ of the nominal output voltage over the input voltage range																																												
Load regulation	Within specified minimum and maximum outputs from 0% to 100% load																																												
Hold up time	20 msec following loss of power																																												
Heat dissipation	190 W (IPBLC01, IPFLD24, IPFLD48, IPFLD125) 95 W (IPFLD01) 175 W (IPSYS01)																																												
IPMON01																																													
Power input	0.3 A at 120 VAC 0.2 A at 240 VAC and 125 VDC																																												
System bus voltage monitor trip points	<table border="1"> <thead> <tr> <th rowspan="2">Voltage Bus Nominal (VDC)</th> <th colspan="2">Low Trip</th> <th colspan="2">High Trip</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>4.75</td> <td>4.80</td> <td>NA¹</td> <td>NA¹</td> </tr> <tr> <td>15</td> <td>14.50</td> <td>14.70</td> <td>NA¹</td> <td>NA¹</td> </tr> <tr> <td>-15</td> <td>-14.50</td> <td>-14.70</td> <td>NA¹</td> <td>NA¹</td> </tr> <tr> <td>25.5</td> <td>24.20</td> <td>24.50</td> <td>NA¹</td> <td>NA¹</td> </tr> <tr> <td>25.5 (aux)</td> <td>21.40</td> <td>21.60</td> <td>27.00</td> <td>27.40</td> </tr> <tr> <td>49.1 (aux)</td> <td>42.50</td> <td>43.35</td> <td>54.00</td> <td>54.60</td> </tr> <tr> <td>125.6 (aux)</td> <td>113.05</td> <td>115.05</td> <td>142.75</td> <td>144.75</td> </tr> </tbody> </table> <p>NOTE: 1. Power module provides overvoltage protection.</p>	Voltage Bus Nominal (VDC)	Low Trip		High Trip		Min	Max	Min	Max	5	4.75	4.80	NA ¹	NA ¹	15	14.50	14.70	NA ¹	NA ¹	-15	-14.50	-14.70	NA ¹	NA ¹	25.5	24.20	24.50	NA ¹	NA ¹	25.5 (aux)	21.40	21.60	27.00	27.40	49.1 (aux)	42.50	43.35	54.00	54.60	125.6 (aux)	113.05	115.05	142.75	144.75
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Logic status inputs	2 inputs, logic 0 = fault Logic 0 \leq 0.8 VDC at 10 mA sink current Logic 1 \geq 3.1VDC at 80 μ A source current																																												
Fan status inputs	2 inputs for fan speed monitoring of low fan speed (fan speed controlled as a function on internal cabinet temperature)																																												
Power fail interrupt (PFI)	1 output, open collector driven (nonisolated), logic 0 = power failure Logic 0 \leq 0.8 VDC at 10 mA sink current Logic 1 \geq 4.75 to 5.25 VDC at 80 μ A source current																																												
Status out	1 output, open collector driven (nonisolated), logic 0 = fault Logic 0 \leq 0.8 VDC at 10 mA sink current Logic 1 \geq 4.75 to 5.25 VDC at 80 μ A source current																																												
Bus alarm	1 output, opto-isolated open collector driven (24 V), logic 1 = fault Logic 0 \leq 1.2 VDC at 150 mA sink current Logic 1 \geq 5 to 30 VDC at 80 μ A source current																																												

Property	Characteristic/Value
Power alarm	1 output, opto-isolated open collector driven (24 V), logic 1 = fault Logic 0 \leq 1.2 VDC at 150 mA sink current Logic 1 \geq 5 to 30 VDC at 80 μ A source current
I/O alarm	1 output, opto-isolated open collector driven (24 V), logic 1 = fault Logic 0 \leq 1.2 VDC at 150 mA sink current Logic 1 \geq 5 to 30 VDC at 80 μ A source current

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Nomenclature

1	2	3	4	5	6	7	8	
								Chassis
I	P	C	H	S	0	1	_	Power module chassis (supports Harmony rack modules only)
I	P	C	H	S	0	2	_	Power module chassis (supports both Harmony blocks and rack modules)
I	P	F	C	H	0	1	_	Power fan chassis
								Fans
I	P	F	A	N	1	4	_	120/240 VAC, 125 VDC
								Modules
I	P	B	L	C	0	1	_	Harmony power (24 VDC)
I	P	F	L	D	0	1	_	Field power (24 VDC)
I	P	F	L	D	2	4	_	Field power (24 VDC)
I	P	F	L	D	4	8	_	Field power (48 VDC)
I	P	F	L	D	1	2	5	Field power (125 VDC)
I	P	M	O	N	0	1	_	Power monitor
I	P	S	Y	S	0	1	_	System power (5 VDC, 15 VDC, -15 VDC, 24 VDC)
								Power Entry
I	P	E	C	B	1	1	_	Circuit breaker (AC)
I	P	E	C	B	1	3	_	Circuit breaker (DC)
I	P	E	S	W	1	1	_	Switch (AC)
I	P	E	S	W	1	3	_	Switch (DC)

For the latest information on ABB visit us on the World Wide Web at <http://www.abb.com>

Our worldwide staff of professionals is ready to meet *your* needs for process automation.
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