

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:
 - IPFAN14Power 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??	Harmony Modular Power System II, Overview

Specifications

Property	Characteristic/Value														
General															
Power input Voltage	<table><tr><th rowspan="2">External Ambient Temp.</th><th colspan="2">Input Voltage</th></tr><tr><th>Nominal</th><th>Operating Range</th></tr><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></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														
	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													
Current	20 A maximum per side														
Peak inrush current	15 A per power module for 100 msecs 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	IPEWS11, IPEWS13																																																																											
Input voltage																																																																												
IPECB11, IPEWS11	102 to 264 VAC																																																																											
IPECB13, IPEWS13	102 to 144 VDC																																																																											
Input current	20 A maximum																																																																											
Voltage drop across breaker/ switch	2 V drop at 20 A nominal																																																																											
System fan	IPFAN14																																																																											
Input power	0.72 A nominal at 120 VAC 0.42 A nominal at 240 VAC 0.50 A at nominal 125 VDC																																																																											
Frequency	47 to 63 Hz																																																																											
Weight and dimensions	<table><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><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></table> NOTES: 1. The total system weight is 48 kg (106 lb) maximum. 2. Dimension includes the handle. <table><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><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></table> NOTE: 1. The total system weight is 48 kg (106 lb) maximum.	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)
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)																																																																								
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																																																	
Power input																																																	
Voltage	102 to 264 VAC; 102 to 144 VDC																																																
Current	<table><tr><th rowspan="2">Module</th><th colspan="3">Full Load Input Current (A)</th></tr><tr><th>120 VAC</th><th>240 VAC</th><th>125 VDC</th></tr><tr><td>IPBLC01</td><td>4.7</td><td>2.4</td><td>4.7</td></tr><tr><td>IPFLD01</td><td>2.2</td><td>1.0</td><td>2.2</td></tr><tr><td>IPFLD24</td><td>4.7</td><td>2.4</td><td>4.7</td></tr><tr><td>IPFLD48</td><td>4.4</td><td>2.2</td><td>4.4</td></tr><tr><td>IPFLD125</td><td>4.7</td><td>2.4</td><td>4.7</td></tr><tr><td>IPSYS01</td><td>4.3</td><td>2.0</td><td>4.3</td></tr></table>	Module	Full Load Input Current (A)			120 VAC	240 VAC	125 VDC	IPBLC01	4.7	2.4	4.7	IPFLD01	2.2	1.0	2.2	IPFLD24	4.7	2.4	4.7	IPFLD48	4.4	2.2	4.4	IPFLD125	4.7	2.4	4.7	IPSYS01	4.3	2.0	4.3																	
Module	Full Load Input Current (A)																																																
	120 VAC	240 VAC	125 VDC																																														
IPBLC01	4.7	2.4	4.7																																														
IPFLD01	2.2	1.0	2.2																																														
IPFLD24	4.7	2.4	4.7																																														
IPFLD48	4.4	2.2	4.4																																														
IPFLD125	4.7	2.4	4.7																																														
IPSYS01	4.3	2.0	4.3																																														
Power output																																																	
Voltage/current	<table><tr><th>Module Outputs</th><th colspan="4">IPSYS01¹</th><th>IPBLC01 IPFLD01 IPFLD24</th><th>IPFLD48</th><th>IPFLD125</th></tr><tr><td>Nominal VDC</td><td>5.09</td><td>15.10</td><td>-15.10</td><td>25.50</td><td>25.50</td><td>49.1</td><td>125.6</td></tr><tr><td>Minimum VDC</td><td>5.04</td><td>14.95</td><td>-14.95</td><td>24.35</td><td>24.35</td><td>48.5</td><td>124.2</td></tr><tr><td>Maximum VDC</td><td>5.25</td><td>15.75</td><td>-15.75</td><td>26.80</td><td>26.80</td><td>49.6</td><td>127.1</td></tr><tr><td>Maximum ripple and noise (mV_{pp})</td><td>100</td><td>150</td><td>150</td><td>250</td><td>250</td><td>600</td><td>1,000</td></tr><tr><td>Full load (A)</td><td>17.00</td><td>1.80</td><td>1.80</td><td>5.60</td><td>5.60/11.2²</td><td>5.45</td><td>2.3</td></tr></table> NOTES: 1. Total module power output cannot exceed 260 W. 2. 11.2 A for IPBLC01 and IPFLD24 modules.	Module Outputs	IPSYS01 ¹				IPBLC01 IPFLD01 IPFLD24	IPFLD48	IPFLD125	Nominal VDC	5.09	15.10	-15.10	25.50	25.50	49.1	125.6	Minimum VDC	5.04	14.95	-14.95	24.35	24.35	48.5	124.2	Maximum VDC	5.25	15.75	-15.75	26.80	26.80	49.6	127.1	Maximum ripple and noise (mV _{pp})	100	150	150	250	250	600	1,000	Full load (A)	17.00	1.80	1.80	5.60	5.60/11.2 ²	5.45	2.3
Module Outputs	IPSYS01 ¹				IPBLC01 IPFLD01 IPFLD24	IPFLD48	IPFLD125																																										
Nominal VDC	5.09	15.10	-15.10	25.50	25.50	49.1	125.6																																										
Minimum VDC	5.04	14.95	-14.95	24.35	24.35	48.5	124.2																																										
Maximum VDC	5.25	15.75	-15.75	26.80	26.80	49.6	127.1																																										
Maximum ripple and noise (mV _{pp})	100	150	150	250	250	600	1,000																																										
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	±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 msecs 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><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><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></table> NOTE: 1. Power module provides overvoltage protection.	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
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																																									
Input voltage monitor trip points	<table><tr><th rowspan="2">Input Voltage (Nominal)</th><th colspan="2">Low Trip¹</th></tr><tr><th>Min</th><th>Max</th></tr><tr><td>120 VAC</td><td>88</td><td>90</td></tr><tr><td>240 VAC</td><td>176</td><td>180</td></tr><tr><td>125 VDC</td><td>88</td><td>90</td></tr></table> NOTE: 1. The MPS II system will operate at voltages as low as the input voltage monitor low trip point, however operation below the minimum system input voltage specification is not recommended.	Input Voltage (Nominal)	Low Trip ¹		Min	Max	120 VAC	88	90	240 VAC	176	180	125 VDC	88	90																														
Input Voltage (Nominal)	Low Trip ¹																																												
	Min	Max																																											
120 VAC	88	90																																											
240 VAC	176	180																																											
125 VDC	88	90																																											
Logic status inputs	2 inputs, logic 0 = fault Logic 0 ≤0.8 VDC at 10 mA sink current Logic 1 ≥ 3.1VDC at 80 μA 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 ≤0.8 VDC at 10 mA sink current Logic 1 ≥ 4.75 to 5.25 VDC at 80 μA source current																																												
Status out	1 output, open collector driven (nonisolated), logic 0 = fault Logic 0 ≤0.8 VDC at 10 mA sink current Logic 1 ≥ 4.75 to 5.25 VDC at 80 μA source current																																												
Bus alarm	1 output, opto-isolated open collector driven (24 V), logic 1 = fault Logic 0 ≤1.2 VDC at 150 mA sink current Logic 1 ≥ 5 to 30 VDC at 80 μA source current																																												

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

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

TMControl^{IT} is a trademark of ABB.

TMSymphony is a trademark of ABB.

*For more information on the Control^{IT} suite of products , contact us at ControlIT@us.abb.com
For the latest information on ABB visit us on the World Wide Web at <http://www.abb.com>*



WBPEEUD210021B1 Litho in U.S.A. Apr 2003
Copyright © 2003 by ABB, All Rights Reserved
© Registered Trademark of ABB.
TM Trademark of ABB.

Automation Technology Products
Wickliffe, Ohio, USA
www.abb.com/processautomation
email: industrialitsolutions@us.abb.com

Automation Technology Products
Västerås, Sweden
www.abb.com/processautomation
email: processautomation@se.abb.com

Automation Technology Products
Mannheim, Germany
www.abb.de/processautomation
email: marketing.control-products@de.abb.com