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

<table>
<tr><th>Property</th><th>Characteristic/Value</th></tr>
<tr><td colspan="2">General</td></tr>
<tr><td>Power input
Voltage</td><td>
<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>
</td></tr>
<tr><td>Current</td><td>20 A maximum per side</td></tr>
<tr><td>Peak inrush current</td><td>15 A per power module for 100 msecs maximum for AC or DC input power</td></tr>
<tr><td>Frequency</td><td>47 to 63 Hz</td></tr>
<tr><td>Total harmonic distortion</td><td>Less than 5%</td></tr>
<tr><td>Efficiency</td><td>60% at full rated load</td></tr>
<tr><td>Power factor</td><td>Actively corrected to 0.95 minimum at input currents greater than 0.5 A</td></tr>
<tr><td>Power module chassis</td><td>IPCHS01, IPCHS02</td></tr>
<tr><td>Input power capacity</td><td>20 A maximum per side</td></tr>
<tr><td>Output bus capacity</td><td>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</td></tr>
<tr><td>IPCHS02 Harmony power connector rating</td><td>Approximately 7 A</td></tr>
<tr><td>Power entry circuit breaker</td><td>IPECB11, IPECB13</td></tr>
</table>

<table>
<tr><th>Property</th><th>Characteristic/Value</th></tr>
<tr><td>Power entry switch</td><td>IPEWS11, IPEWS13</td></tr>
<tr><td>Input voltage</td><td></td></tr>
<tr><td>IPECB11, IPEWS11</td><td>102 to 264 VAC</td></tr>
<tr><td>IPECB13, IPEWS13</td><td>102 to 144 VDC</td></tr>
<tr><td>Input current</td><td>20 A maximum</td></tr>
<tr><td>Voltage drop across breaker/ switch</td><td>2 V drop at 20 A nominal</td></tr>
<tr><td>System fan</td><td>IPFAN14</td></tr>
<tr><td>Input power</td><td>0.72 A nominal at 120 VAC
0.42 A nominal at 240 VAC
0.50 A at nominal 125 VDC</td></tr>
<tr><td>Frequency</td><td>47 to 63 Hz</td></tr>
<tr><td>Weight and dimensions</td><td>
<table>
<tr><th>Module[1]</th><th>Weight kg (lb)</th><th>Height mm (in.)</th><th>Width mm (in.)</th><th>Depth[2] 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>Component[1]</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.
</td></tr>
<tr><td>Electromagnetic/radio frequency interference</td><td>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.</td></tr>
<tr><td>Fast transient/burst susceptibility</td><td>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.</td></tr>
<tr><td>Transient surge</td><td>Meets IEC 801.5, level 3, 2 kV with no loss of function or false status information.</td></tr>
</table>

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	

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

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

NOTES:
1. Total module power output cannot exceed 260 W.
2. 11.2 A for IPBLC01 and IPFLD24 modules.

<table>
<tr><th>Property</th><th>Characteristic/Value</th></tr>
<tr><td>Load sharing</td><td>Current shared equally between modules within 5% (highest current load to lowest current load) at full load</td></tr>
<tr><td>Line regulation</td><td>±0.5% of the nominal output voltage over the input voltage range</td></tr>
<tr><td>Load regulation</td><td>Within specified minimum and maximum outputs from 0% to 100% load</td></tr>
<tr><td>Hold up time</td><td>20 msecs following loss of power</td></tr>
<tr><td>Heat dissipation</td><td>190 W (IPBLC01, IPFLD24, IPFLD48, IPFLD125)
95 W (IPFLD01)
175 W (IPSYS01)</td></tr>
<tr><td colspan="2">IPMON01</td></tr>
<tr><td>Power input</td><td>0.3 A at 120 VAC
0.2 A at 240 VAC and 125 VDC</td></tr>
<tr><td>System bus voltage monitor trip points</td><td>
<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>NA[1]</td><td>NA[1]</td></tr>
<tr><td>15</td><td>14.50</td><td>14.70</td><td>NA[1]</td><td>NA[1]</td></tr>
<tr><td>-15</td><td>-14.50</td><td>-14.70</td><td>NA[1]</td><td>NA[1]</td></tr>
<tr><td>25.5</td><td>24.20</td><td>24.50</td><td>NA[1]</td><td>NA[1]</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.
</td></tr>
<tr><td>Input voltage monitor trip points</td><td>
<table>
<tr><th rowspan="2">Input Voltage (Nominal)</th><th colspan="2">Low Trip[1]</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.
</td></tr>
<tr><td>Logic status inputs</td><td>2 inputs, logic 0 = fault
Logic 0 ≤0.8 VDC at 10 mA sink current
Logic 1 ≥ 3.1VDC at 80 µA source current</td></tr>
<tr><td>Fan status inputs</td><td>2 inputs for fan speed monitoring of low fan speed (fan speed controlled as a function on internal cabinet temperature)</td></tr>
<tr><td>Power fail interrupt (PFI)</td><td>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</td></tr>
<tr><td>Status out</td><td>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</td></tr>
<tr><td>Bus alarm</td><td>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</td></tr>
</table>

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 µA 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 µA source current

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