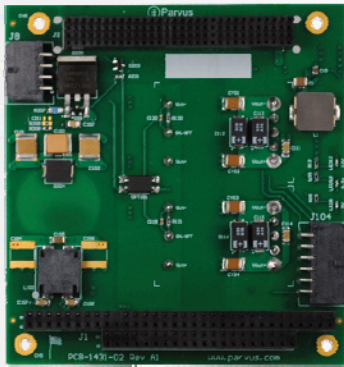
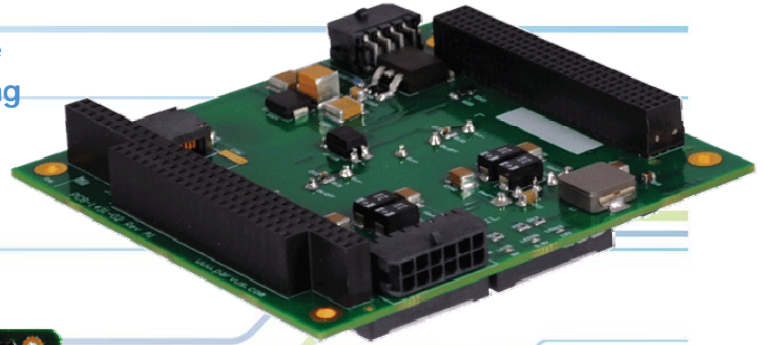


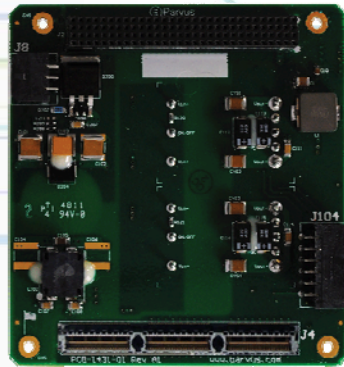
PC/104-Plus & PCI/104-Express 100W Isolated DC/DC MIL-STD-1275/704 Power Supplies

PWR-21-11 / PWR-22-11

- 100 Watt PC104+ / PCIe104 Power Supply
- MIL-STD-704F & MIL-STD-1275D Compliance
- MIL-STD-461F EMI Filter / Power Conditioning
- 18V to 36VDC Input Range
- +3V, +5V, +12V DC Output
- Extended Temperature: -40 to +85C
- MIL-STD-810G Shock/Vibe/Thermal

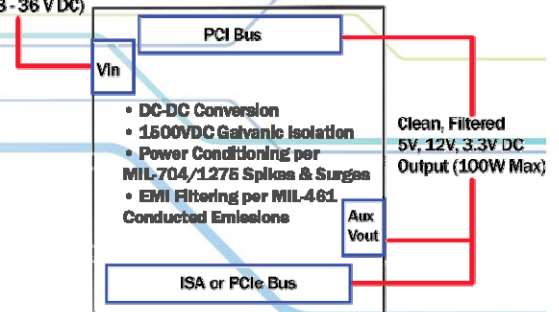


PC/104-Plus (PWR-21-11)



PCI/104-Express (PWR-22-11)

Unregulated Vehicle Battery /
Aircraft Generator Power Input
(18 - 36 V DC)



FEATURES

APPLICATIONS

- 24 / 28V DC-DC Conversion for PC/104, PC/104-Plus, PCI-104, PCIe104, PCI/104-Express and Other Small Form Factor Embedded Systems
- Compliance with MIL-STD-1275, MIL-STD-704, MIL-STD-461 Surges, Spikes, Conducted Emissions in Aerospace / Avionics / Military / Ground Vehicles \

FORM FACTOR

- PWR-21-11: PC/104-Plus (ISA + PCI)
- PWR-22-11: PCI/104-Express (PCI + PCIe)

COMPLIANCE:

- Designed to Meet MIL-STD-810G (Environmental), MIL-STD-1275D and MIL-STD-704F (Voltage Input, Surges, Spikes, Transients), MIL-STD-461F (Conducted Emissions & Susceptibility)

VOLTAGE INPUT:

- Nominal 28.0 V DC (+18V to +36VDC with Support for 250V Spike and 100V Surge per MIL-STD-1275, as well as 1500V DC Galvanic Isolation)

VOLTAGE OUTPUT:

- Up to 100 Watts: +5V @ 10A (50W Max), +3.3V @ 15A (50W Max), +12 V @ 1.5A (18W Max – 12V derived from 3.3V rail)
- Optional 50 Watt 5V Only Configuration: +5V @ 10A (50W Max)

REMOTE SHUTOFF

- Remote Power on/off Shutdown Support

- Defense & Homeland Security
- Vehicle, Aircraft, Shipboard Applications

The PWR-21-11 and PWR-22-11 boards are rugged MIL-STD-1275/704 compliant DC/DC converter cards in stackable embedded PC/104-Plus (PWR-21-11) and PCI/104-Express (PWR-22-11) form factors designed for demanding power conditions experienced by embedded computing devices used onboard military ground vehicles (MIL-STD-1275D) and aircraft (MIL-STD-704F) installations. These galvanically isolated supplies provide 100 watts of combined power output (+3.3V, +5V, +12V) and come equipped with MIL-STD-461 EMI filtering and transient protections specifically designed for demanding 250V spike and 100V surge requirements under MIL-STD-1275. These boards provide power over stackable buses (PCI and ISA buses for PWR-21-11, PCI and PCI-Express buses for PWR-22-11) as well as auxiliary power output connectors for non-PC/104 systems. They support an 18-36V DC input range for 24/28VDC applications, and typically eliminate the need for additional in-line power conditioning/EMI filtering devices in military embedded systems.

Featuring a rugged mechanical design, these small form factor (3.550" x 3.775") cards are designed to be used as the bottom module in a PC/104, PC/104-Plus, PCI-104, PCIe104, or PCI/104-Express embedded system stack, operate without any active cooling over extended temperature ranges (-40 to +85C per MIL-STD-810G), and provide resistance to high levels of shock and vibration (per MIL-STD-810G fixed wing jet, rotary aircraft, and tracked ground vehicle conditions). They are passively cooled by attaching the bottom of the card to a thermally conductive base or enclosure wall with electrically-isolated gap pad to dissipate heat. A tribute to their robustness and versatility, the PWR-21-11 and PWR-22-11 power supplies are integrated into various MIL-STD-810/1275/704/461 qualified Parvus DuraCOR mission computers, DuraNET Ethernet switches, and DuraMAR mobile IP router subsystems. These small form factor supplies are compatible with Cisco Systems' PCI-104 5915 Series Embedded Services Router (ESR) card as well as a host of embedded Single Board Computers modules on the market.

Specifications



Top View of PWR-22-11 (PCI/104-Express)



Bottom View of PWR-22-11 (PC/104-Plus)



Side View of PWR-21-11 (Note Bottom-Mount DC/DC Converter for Optimal Heatsinking)

FUNCTION	<ul style="list-style-type: none"> MIL-STD Compliant Isolated DC/DC Converter Board Converts DC Input from Vehicle Battery / Aircraft Generator to Provide Clean, Filtered Output to Size, Weight & Power (SWaP) Sensitive Embedded Systems in Mobile, Airborne, and Vehicle Applications
STANDARDS COMPLIANCE	<ul style="list-style-type: none"> PC/104-Plus (PWR-21-11) PCI/104-Express (PWR-22-11) MIL-STD-704F (Aircraft Power Transients) MIL-STD-1275D (Vehicle Power Transients) MIL-STD-461F (Conducted Emissions & Susceptibility) MIL-STD-810G (Environmental)
POWER INPUT	<ul style="list-style-type: none"> Normal Steady State Operation: 18V DC to 36V DC (28V DC Nominal) Compatible with 100V Surge / 250V Spike Conditions (per MIL-STD-1275) Connector: Molex Plug-Socket Connector
POWER OUTPUT	<ul style="list-style-type: none"> Up to 100 Watts: <ul style="list-style-type: none"> +5V @ 10A (50W Max) +3.3V @ 15A (50W Max) +12V @ 1.5A (18W Max – 12V Derived from 3.3V Rail) Connectors: <ul style="list-style-type: none"> Molex Plug-Socket Connector – Rated for Full Output Capabilities of 5V, 3.3V, 12V Rails Stacking PCI and ISA Bus Connectors on Top of Board (PWR-21-11) Stacking PCI and PCI-Express Bus Connectors on Top of Board (PWR-22-11)
VOLTAGE / LOAD PROTECTION & CONDITIONING	<ul style="list-style-type: none"> Input Protection per MIL-STD-1275D and MIL-STD-704F: Reverse Polarity, Voltage Transient, Surge (100V), Spike (250V), Reverse Polarity, EMI/RFI Filter Electrical (Galvanic) Isolation: 1500V Input to Output, 1500V Output to Case Output Protection: Short Circuit Protection, Overcurrent Protection, Overvoltage Protection In-Rush Current Limited to <10A@3ms Max
EFFICIENCY:	<ul style="list-style-type: none"> DC/DC Conversion Efficiency: Approximately 84% at Full Load
SWITCHING FREQUENCY:	<ul style="list-style-type: none"> Synchronized Switching at 350kHz for Reduced Noise and System Stress
PARD (Noise, Ripple)	<ul style="list-style-type: none"> <50 mV p-p Max (20MHz)
REMOTE ON/OFF	<ul style="list-style-type: none"> Remote Shutdown Support (Onboard Molex Connector)
STATUS INDICATION	<ul style="list-style-type: none"> Onboard Voltage Rail Status LEDs
PHYSICAL	<ul style="list-style-type: none"> Form Factor: <ul style="list-style-type: none"> PC/104-Plus (ISA and PCI Buses) – PWR-21-11-XX, Stack-thru Buses on Top Only PCI/104-Express (PCIe and PCI Buses) – PWR-22-11-XX, Stack-thru Buses on Top Only Dimensions: 3.550" x 3.775" (90x96 mm) L x W - PC/104-Plus / PCI/104-Express Compliant, except Component Height on Bottom Weight: Approx. 0.35 lbs (0.16 kg) Cooling: Passive Conductive Baseplate Cooling: Bottom-Mounted DC/DC Converter Module Should Be Mated with Thermally Conductive, Electrically-Isolated Gap Pad Against System Enclosure Wall to Dissipate Heat. Base Plate Temperature Must Stay Below 100°C (Max).
ENVIRONMENTAL	<ul style="list-style-type: none"> Designed to Meet MIL-STD-810G: <ul style="list-style-type: none"> Operating Temp: -40° to +85°C / -40° to +185°F at thermal interface (MIL-810G, Methods 501,502) Storage Temp: -55° to +100°C / -67° to 212°F at thermal interface (MIL-810G, Methods 501,502) Operating Shock: 40g, 11ms, 3 pos/neg per axis (MIL-STD-810G, Meth 516) Random Vibration: Jet-Helo-Tracked Vehicle Profile, 3 Axes, 1 Hour/Axis (MIL-810G, Method 514) Humidity: Up to 95% RH @ 40C, Non-Condensing (Qual by Analysis)
EMI / EMC	<ul style="list-style-type: none"> Designed to Meet MIL-STD-461F: <ul style="list-style-type: none"> Conducted Emissions, CE102, Power Leads, 10 KHz to 10MHz, basic curve Conducted Susceptibility, CS101, Power Leads, 30 Hz to 150 KHz, Curve 2 (28V and Below)
RELIABILITY	<ul style="list-style-type: none"> MTBF: TBD Calculated per MIL-HDBK-217F Workmanship: Assembled to IPC-A-610 Class III Workmanship No Moving Parts. No Active Cooling Required. Over-temperature Shutdown @ 100C
OPTIONS	<ul style="list-style-type: none"> Conformal Coating Special Ordered; Integrated into PC/104+ or PCI/104-Express Chassis/System
ORDERING CODES	<ul style="list-style-type: none"> PWR-21-11-01: 100W PC104+ MIL-1275/704 DC/DC Power Supply, Vout=+3.3V, 5V, 12V PWR-21-11-02: 50W PC104+ MIL-1275/704 DC/DC Power Supply, Vout=+5V only PWR-21-11-03: 50W MIL-1275/704 DC/DC Power Supply, Vout=+5V only, no bus connectors PWR-21-11-04: 100W MIL-1275/704 DC/DC Power Supply, Vout=+3.3V, 5V, 12V, no bus connectors PWR-22-11-01: 100W PCI/104-Express MIL-1275/704 DC/DC Power Supply, Vout=+3.3V, 5V, 12V PWR-22-11-02: 50W PCI/104-Express MIL-1275/704 DC/DC Power Supply, Vout=+5V

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