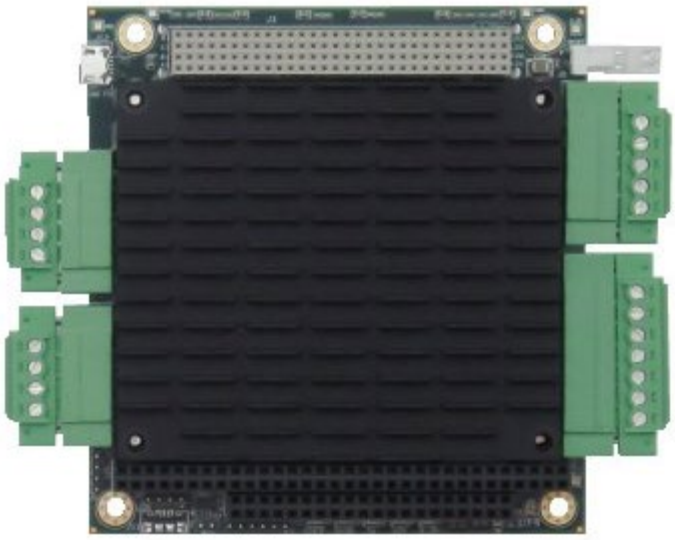
JUPITER-MM-5000 Advanced Technology PC/104-Plus DC/DC Power Supply

PC104



JMM-5312-APDRK with PC/104-Plus connectors and heat sink

JMM-5312-APDRH with heat spreader

FEATURES

- Up to 218W total output power at 25°C
- +5VDC at 20A maximum
- +12VDC at 8A maximum
- +3.3VDC at 5A maximum
- +5VDC standby option at 1A maximum
- +3.3VDC standby option at 0.1A max
- Extreme load stability: 0.35% maximum output voltage droop at 5V output, 0-20A load, V_{IN} = 12V, T_A = 25°C
- Extremely low ripple: 12mV peak-to-peak at 5V output, 0-20A load, V_{IN} = 12V, T_A = 25°C
- High efficiency: 92-94% at 5V output, 0-20A load, V_{IN} = 12V, T_A = 25°C
- Excellent transient load response: +/-72mV at 5V output, 25-75% load step, 2.5A/usec ramp rate, V_{IN} = 24V, T_A = 25°C
- Extreme temperature stability: +/-0.5% at 5V output, 10A load, V_{IN} = 24V, T_A = -40°C to +85°C
- Input protection circuit protects from over/under voltage, reverse polarity, surges, transients, reflected noise
- Advanced System Controller with:
  - Programmable output voltage adjustment
  &nbs
- Wide input voltage range: +7 to +34VDC input
- Remote or programmable on/off control
- Dual input option with auto-cutover
- Heat spreader and heat sink cooling solutions
- PC/104 and PC/104-*Plus* bus connector options
- PC/104 form factor: 3.55" x 3.775" (90mm x 96mm)
- Extremely rugged -40°C to +85°C operating temperature

Control software for programming and monitoring the JMM-5000

Jupiter-MM-5000 high-efficiency, high-precision 218W power supplies consist of a PC/104 form factor module with complete DC-DC voltage regulator circuitry, integrated thermal solution, detachable screw terminal block I/O connections, and PC/104 bus connectors. The wide input voltage range of 7 to 34VDC is compatible with industry standard 12V, 24V, and 28V inputs.

On-board intelligence provides an unsurpassed level of control, monitoring and safety. All features are accessible and configurable via benchtop application software plus a programming library for real-time control.

The Jupiter-MM-5000 uses a state-of-the-art design with the latest generation high efficiency components. It delivers efficiency as high as 95 percent, reducing input power requirements as well as heat generation.

Jupiter-MM-5000 was engineered for rugged applications such as automotive or on-vehicle. Extended temperature operation of -40°C to +85°C is tested and guaranteed. Low-profile, surface mount components reduce susceptibility to shock and vibration. Both a low profile heat sink and heat spreader cooling options are available. I/O connections are made with locking screw terminal blocks for the highest degree of ruggedness.

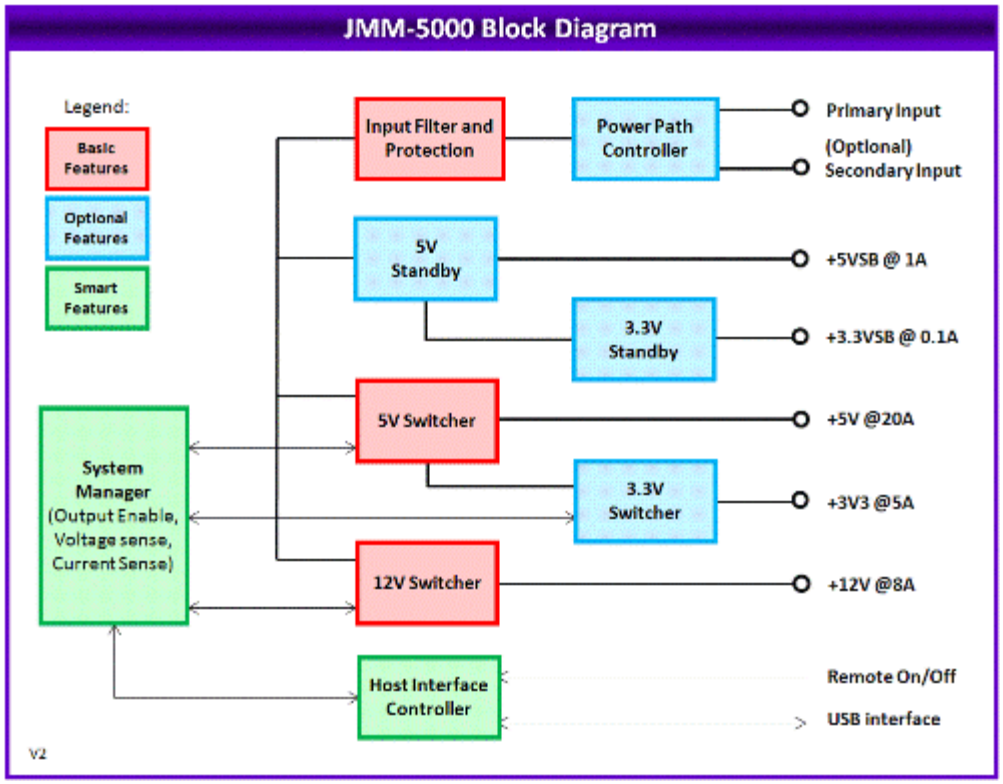
Advanced System Controller

The full featured Jupiter-MM-5312 models include a system controller that offers advanced configuration, control, and monitoring features. The system controller is accessed via a USB port and is accompanied by benchtop configuration software as well as an application library for in-application real-time control.

- Individual supply on/off control for +12V, +5V, +5V standby, +3.3V, and +3.3V standby outputs
- Individual supply output voltage / current monitoring
- Output voltage sequencing and slew rate control
- Output voltage adjustment
- Input voltage monitoring
- Fault handling based on programmable limits with interrupt notification, including supply shutdown in case of overload or other programmed conditions

- Hiccup mode for auto-restart when fault conditions are removed
- Min / max voltage and temperature logging
- Secondary input cutover voltage selection

Block Diagram

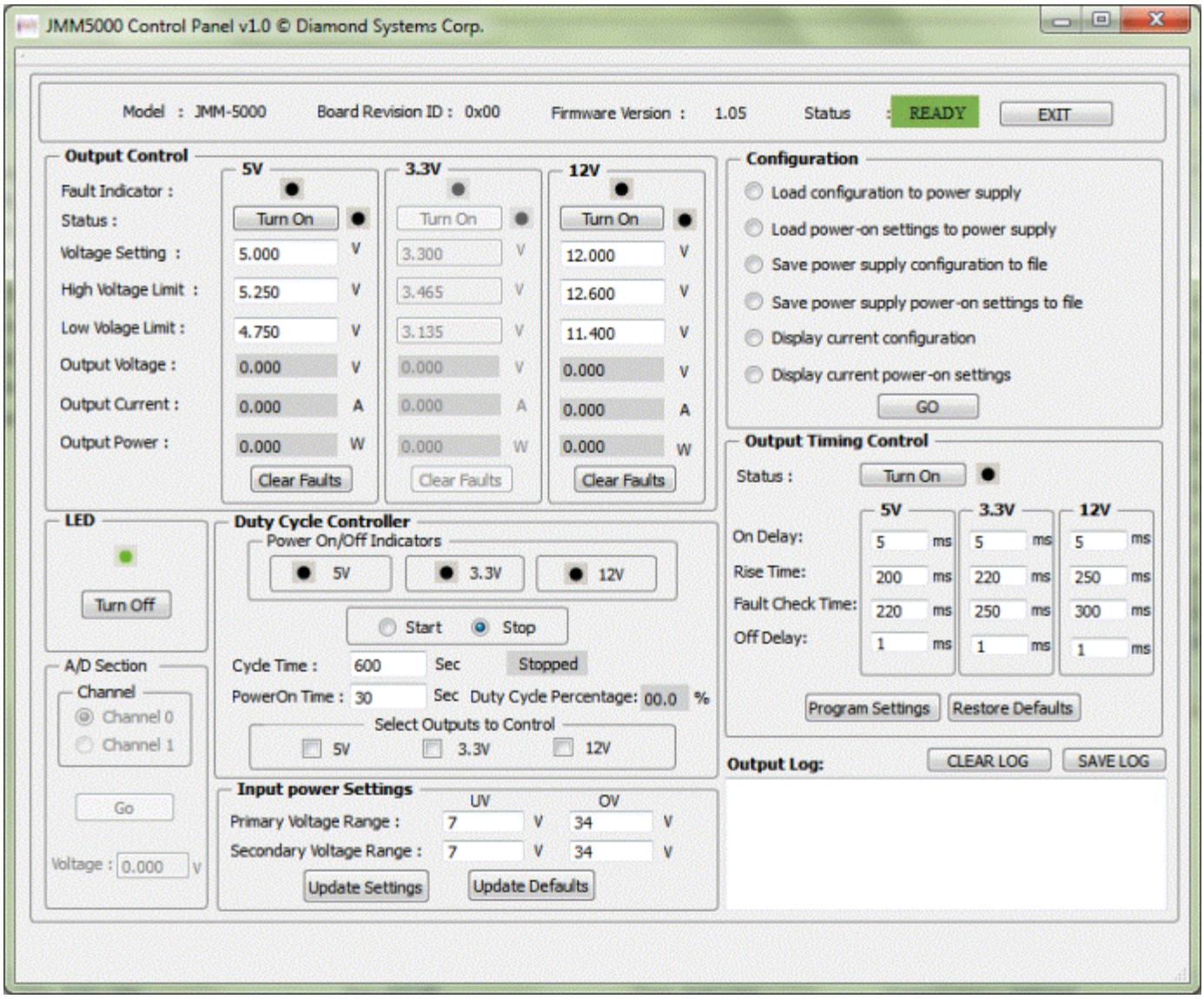


Available Models

Model	5V 20A	12V 8A	3.3V 5A	5V SB	3.3V SB	ISA	PCI	Controller	Thermal
JMM-5312-APDRH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Heat spreader
JMM-5312-APDRK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Heat sink
JMM-5312-ADRH	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Heat spreader
JMM-5312-ADRK	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Heat sink
JMM-5012-APDRH	Yes	Yes		Yes		Yes	Yes	Yes	Heat spreader
JMM-5012-APDRK	Yes	Yes		Yes		Yes	Yes	Yes	Heat sink
JMM-5012-ADRH	Yes	Yes		Yes		Yes		Yes	Heat spreader

JMM-5012-ADRK	Yes	Yes		Yes		Yes		Yes	Heat sink
JMM-5012-APH	Yes	Yes		Yes		Yes	Yes		Heat spreader
JMM-5012-APK	Yes	Yes		Yes		Yes	Yes		Heat sink
JMM-5012-AH	Yes	Yes		Yes		Yes			Heat spreader
JMM-5012-AK	Yes	Yes		Yes		Yes			Heat sink
JMM-5000-APH	Yes					Yes	Yes		Heat spreader
JMM-5000-APK	Yes					Yes	Yes		Heat sink
JMM-5000-AH	Yes					Yes			Heat spreader
JMM-5000-AK	Yes					Yes			Heat sink

- **Advanced Software Control**
- **Advanced Power Management**



The intelligent models of JMM-5000 include a system controller that offers advanced configuration, control, and monitoring features. The system controller is accessed via a USB port and is accompanied by benchtop configuration software as well as an application library for in-application real-time control. Below is a list of key features included. More details can be found in the **Software user manual** and **Control panel user manual**.

Uninterruptible power supply (UPS): The power supply works with dual inputs (primary and backup, usually a battery) to enable uninterrupted operation. In case the primary input drops below a programmable threshold, the supply will automatically switch to the backup power source. Once the primary input returns to a suitable voltage, the supply automatically switches back to it.

Power cycle control: (Programable duty cycle) The power supply can be programmed to turn on at programmable intervals for a programmable duration. This is useful for battery powered applications where the system does not need to be running continuously, and maximum battery lifetime is desired.

Output voltage adjustment: Each output's voltage can be set to millivolt level accuracy under software control. This feature is useful for high power applications where voltage drop in the supply leads may be a concern. The power supply can be configured for a slightly higher output voltage to compensate for the anticipated drop in the output leads.

Output voltage sequencing and slew rate control: The sequence for turn-on and turn-off, as well as the slew rate for each event, can be controlled in software. These parameters are stored in nonvolatile memory for automatic recall each time the unit powers up.

Individual supply on/off control: Each output voltage (+12V, +5V, +5V standby, +3.3V, and +3.3V

standby) can be independently turned on and off under software control.

Individual supply monitoring: The output voltage and output current of each supply output can be monitored in real time.

Input voltage monitoring: The voltage of both primary and secondary inputs is continuously monitored for reporting purposes and also to manage the UPS feature.

Fault handling: The power supply monitors various conditions and can take action to prevent damage to the powered equipment or undesirable behavior. An interrupt can be generated to inform the system software to take desired action. Examples include shutdown in case of output overload or in case of primary input failure.

Hiccup mode: In case of a fault condition, the power supply can be programmed to attempt auto-restart at repeated intervals to enable automatic recovery when fault conditions are removed.

Data logging: The min/max input and output voltages, as well as ambient temperature, can be logged to on-board flash and made available to the system software in real time.

Specifications

Specifications

Input	
Input voltage	7 - 34VDC
Input protection	Over / under voltage, reverse polarity, surges, transients, reflected noise
Output	
Output voltage / current	+5V at 20A maximum +12V at 8A maximum +3.3V at 5A maximum +5V standby at 1A maximum +3.3V standby at 0.1A maximum
Output protection	Current limit and short circuit protection
Load regulation	±0.8%, Vmin to Vmax, 0-100% load on all outputs, -40°C to +85°C 0.35% maximum output voltage droop at 5V output, 0-20A load, V_{IN} = 12V, T_A = 25°C
Output ripple	44mV peak-to-peak maximum 12mV peak-to-peak at 5V output, 0-20A load, V_{IN} = 12V, T_A = 25°C
Efficiency	92-94% at 5V output, 0-20A load, V_{IN} = 12V, T_A = 25°C
Transient load response	+/-72mV at 5V output, 25-75% load step, 2.5A/usec ramp rate, V_{IN} = 24V, T_A = 25°C
Temperature stability	+/-0.5% at 5V output, 10A load, V_{IN} = 24V, T_A = -40°C to 85°C
General	
On / off	Remote or programmable on/off logic input
Dimensions	PC/104 form factor 3.55 " x 3.775" (90mm x 96mm) not including screw terminals Maximum height 0.435" (11mm) above PCB top surface
Bus connection options	16-bit stackthrough ISA bus 32-bit PCI bus
Operating temperature	-40°C to +85°C (-40°F to +185°F)
Operating humidity	5% to 95% non-condensing
Weight	6.3oz (179g) with heat sink 8.1oz (230g) with heat spreader
RoHS	Compliant

Models and Accessories

Jupiter-MM-5000

available models:

JMM-5312-APDRH	Jupiter-MM 5000 Series 218 Watt DC/DC power supply, +5V/+12V/+3.3V/standby voltages, advanced system controller, PC/104-Plus, heat spreader	Long Leadtime
JMM-5312-APDRK	Jupiter-MM 5000 Series 218 Watt DC/DC power supply, +5V/+12V/+3.3V/standby voltages, advanced system controller, PC/104-Plus, heat sink	Long Leadtime
JMM-5312-ADRH	Jupiter-MM 5000 Series 218 Watt DC/DC power supply, +5V/+12V/+3.3V/standby voltages, advanced system controller, PC/104 bus, heat spreader	Long Leadtime
JMM-5312-ADRK	Jupiter-MM 5000 Series 218 Watt DC/DC power supply, +5V/+12V/+3.3V/standby voltages, advanced system controller, PC/104 bus, heat sink	Long Leadtime
JMM-5012-APDRH	Jupiter-MM 5000 196 Watt DC/DC power supply, +5V/+12V/standby voltages, system controller, PC/104-Plus, heat spreader	Available
JMM-5012-APDRK	Jupiter-MM 5000 196 Watt DC/DC power supply, +5V/+12V/standby voltages, system controller, PC/104-Plus, heat sink	Available
JMM-5012-ADRH	Jupiter-MM 5000 196 Watt DC/DC power supply, +5V/+12V/standby voltages, system controller, PC/104 ISA, heat spreader	Available
JMM-5012-ADRK	Jupiter-MM 5000 196 Watt DC/DC power supply, +5V/+12V/standby voltages, system controller, PC/104 ISA, heat sink	Available
JMM-5012-APH	196 Watt Power Supply, +5V/+12V, PC/104-Plus, heat spreader	Available
JMM-5012-APK	196 Watt Power Supply, +5V/+12V, PC/104-Plus, heat sink	Available
JMM-5012-AH	196 Watt Power Supply, +5V/+12V, PC/104, heat spreader	Available
JMM-5012-AK	196 Watt Power Supply, +5V/+12V, PC/104, heat sink	Available
JMM-5000-APH	100 Watt Power Supply, +5V, PC/104-Plus, heat spreader	Available
JMM-5000-APK	100 Watt Power Supply, +5V, PC/104-Plus, heat sink	Available
JMM-5000-AH	100 Watt Power Supply, +5V, PC/104, heat spreader	Available
JMM-5000-AK	100 Watt Power Supply, +5V, PC/104, heat sink	Available

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Cables and accessories

available models:

ACC-HS104-12.7	Heat Sink Accessory

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