GaN-ATX-250

All-In-One (AIO) 250w Output GaN ATX Power Supply

SPECIAL FEATURES

✧ Small, Silent and Smart PSU [S³PSU]

✧ Operates at AC Input Voltage [110Vac & 220Vac]

✧ High Efficiency [>92%]

✧ Arm® Cortex®-M0+ 32-bit RISC MCU Inside with Intelligent Control

✧ Active PFC (Power Factor Correction) Circuit

✧ OCP, OVP, and OTP

✧ Cutting-edge GaN (GALLIUM NITRIDE) Technology

✧ Compact Size: 187mm (L) x 60mm (W) x 32mm (H)

AC INPUT

Average efficiency for Vin=115Vac is 92.8%, ripple voltage is 88mV, and no-load power consumption is 168mW.

Average efficiency for Vin=230Vac is 94.3%, ripple voltage is 84mV, and no-load power consumption is 189mW.
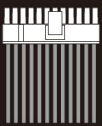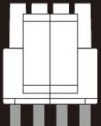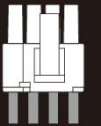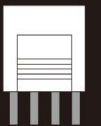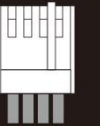
Parameter	Minimal	Normal	Maximum	Unit
Vin (115Vac)	90	115	135	Vac RMS
Vin (230Vac)	180	230	265	Vac RMS
Frequency	47	--	63	Hz

POWER RATINGS

Voltage Rail	Max Load (A)	Peak Load (A)	Regulation
+5V	8	10	±1.5%
+5VSB	2.5	3	±1.5%
+3.3V	8	10	±1.5%
-12V	0.05	0.1	±5.0%
+12V	16	18	±1.5%

Note: Forced air ventilation is required for operating at max load. For fanless or improper ventilation operation derate the output of the 3.3 and 5V rails until PSU temperature falls below 65℃. Peak load should not exceed 60 seconds. Combined max power output should not exceed more than 250 Watts.

WIRE & CONNECTOR CONFIGURATION

Connector / Model	Main Power (20P+4P) 350mm	EPS 12V (4P+4P) 420mm	PCI-E (6P+2P) 420mm	SATA 300mm	Peripheral (4P)	FDD (4P)
GaN-ATX-250	1	1	2	3	1	0

PROTECTION

Overload Protection

The power supply will be shutdown and latch off when load power over 110% ~ 160% of the rated DC output.

Over Current Protection

The power supply shall have current limit to prevent the +12V, +5V and +3.3V outputs from exceeding the values shown in the following table. If the current limits are exceeded the power supply shall shutdown and latch off.

Rail	Over Current Limit
+12V	22A min, 25A max
+5V	8A min, 12A max
+3.3V	8A min, 12A max

Over Voltage Protection

The microcontroller in the PSU monitors all output rails and provides over voltage protection as defined in the following table.

Rail	Min (V)	Norm (V)	Max (V)
+12V	13.4	15	15.6
+5V	5.74	6.3	7
+3.3V	3.76	4.2	4.3

Short Circuit Protection

An output short circuit is defined as any output impedance of less than 0.1 ohms. The power supply shall shut down and latch off for shorting the +3.3V, +5V, or +12V rails to return or any other rail.

No Load Operation

No damage or hazardous condition should occur with all the DC output connectors disconnected from the load. The PSU may latch into shutdown state.

ENVIRONMENT

Operation

Operating temperature from -10℃ to 70℃. Maximum output power falls off linearly as operating temperature increases from 40℃.

Shipping and Storage

Shipping and storage temperature from -40℃ to 80℃. Relative humidity to 95% non-condensing.

Altitude

Operating 10,000FT max. Storage 50,000FT max.

SAFETY & EMC

Safety Standards

Currently no. Can apply for safety certificate according to customer's requirement.

EMC Emission

Currently no test results.

OTHERS

MTBF

The demonstrated MTBF (mean time between failures) shall be 100,000 hours of continuous operation at 25℃ of full load at normal DC input. The MTBF of the power supply shall be calculated in accordance with MIL-HDBK-217F.

Dimension

187mm (L) x 60mm (W) x 32mm (H).

Weight

160 grams excluding cables. 780 grams including cables.

Package Content

One PSU, and one ATX cable kit.

I/O PIN DIAGRAM

The Pin definition is marked as different colors. Please be noted that both the P2 and P3 connectors have the same definition. J1 4-pin connector is for USB to UART for power supply status monitoring. J2 4-pin connector is for synchronization between power supplies. J3 4-pin connector is for firmware programming which is not shown above.
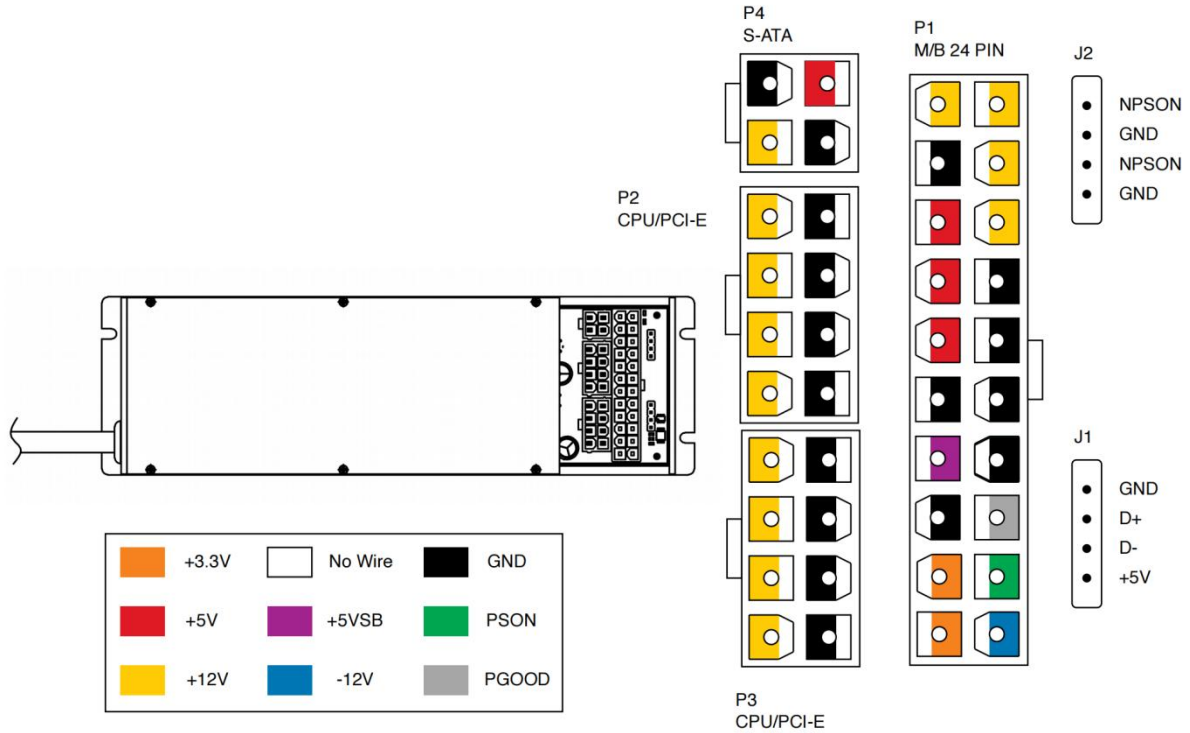
SERIAL COMMUNICATION

Communication mode: baud rate 115200, no parity check, 8 bits data, 1 stop bit

Data frame format:

| NO.	0-1	2	3	4-5	6-7	8-9	10-11	12-13	14-15	16-17
Octets	2	1	1	2	2	2	2	2	2	2
Name	Head	Seq	State	IN_A	PGI	VS12_1	VS12_2	VS5	VS3	Check
Description	0xAA 0x55	Sequence no.	00: IDLE 02: RUN 03: OVP	Input current in mA	Scaled input voltage, mV	12V output rail, mV	The second 12V output rail, mV	5V output rail, mV	3.3V output rail, mV	Check sum

LED

One RGB LED is adopted on board to indicate the status.

| Status	LED
Turn on	LED flashes once with red, blue and green colors in turn
Standby	LED off
Normal working	LED breathes
Abnormal working	LED flashes in red color

TIMING

Compliance with Intel ATX specification version 2.01. Remote ON/OFF control: 1) When the logic level "PS-ON" is low, the DC outputs are to be enabled. 2) When the logic level is high or open collector, the DC outputs are to be disabled.


PGOOD Sense Level = 95% of nominal
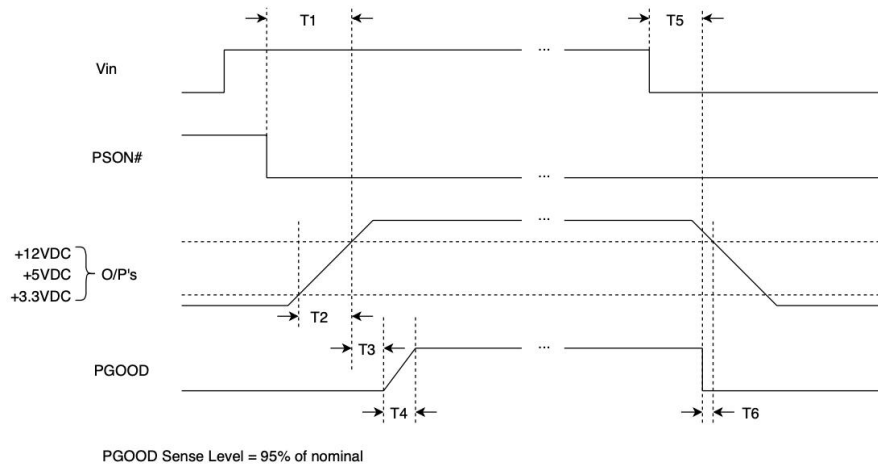
● T1: Power-on time. The time from when PSON# is pulled low to when the +12V, +5V and +3.3V outputs are within the regulation ranges. The power-on time shall be less than 500ms (T1 < 500ms)

● T2: Rise time. The output voltages shall rise from ≤10% of nominal to within the regulation ranges within 0.1 ms to 20 ms (0.1 ≤ T2 ≤ 20ms)

● T3: Power good signal turn on delay time (100 < T3 < 500ms)

● T4: Power good signal rise time (T4 ≤ 10ms)

● T5: Voltage input loss to PGOOD hold-up time (T5 ≥ 16ms)

● T6: Power down warning (T6 ≥ 1ms)

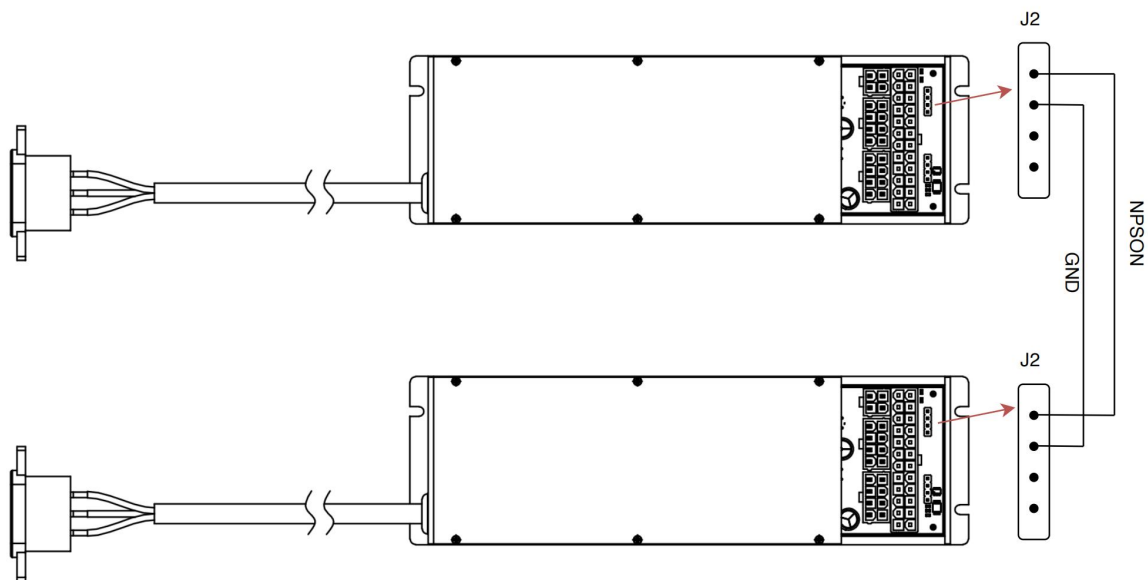## CABLE DIAGRAM

ATX Output Cable
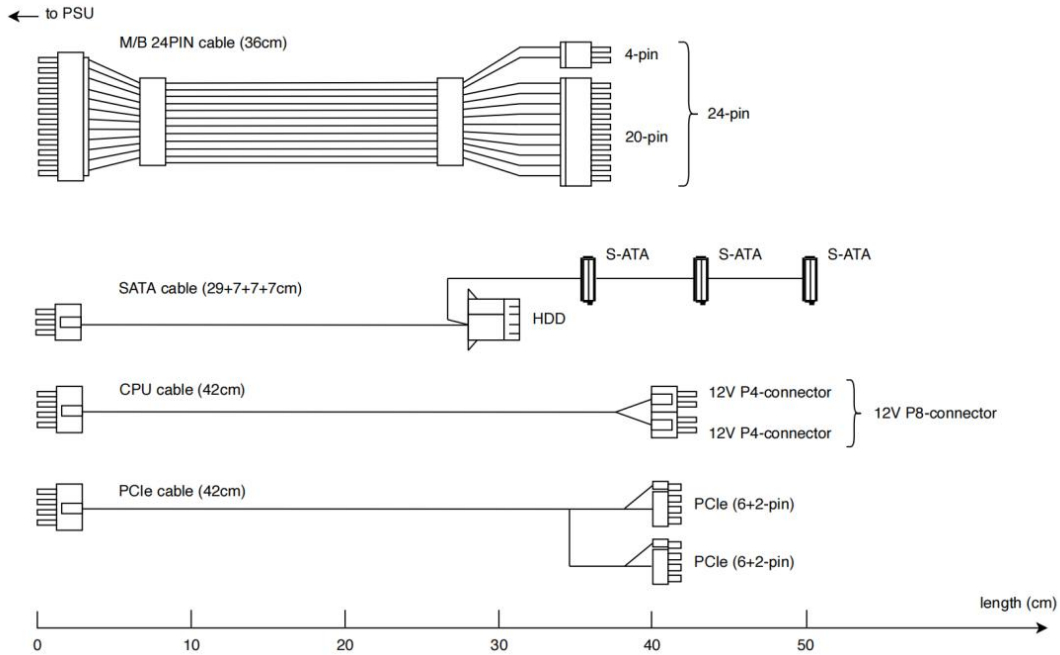
MOUNTING HOLE
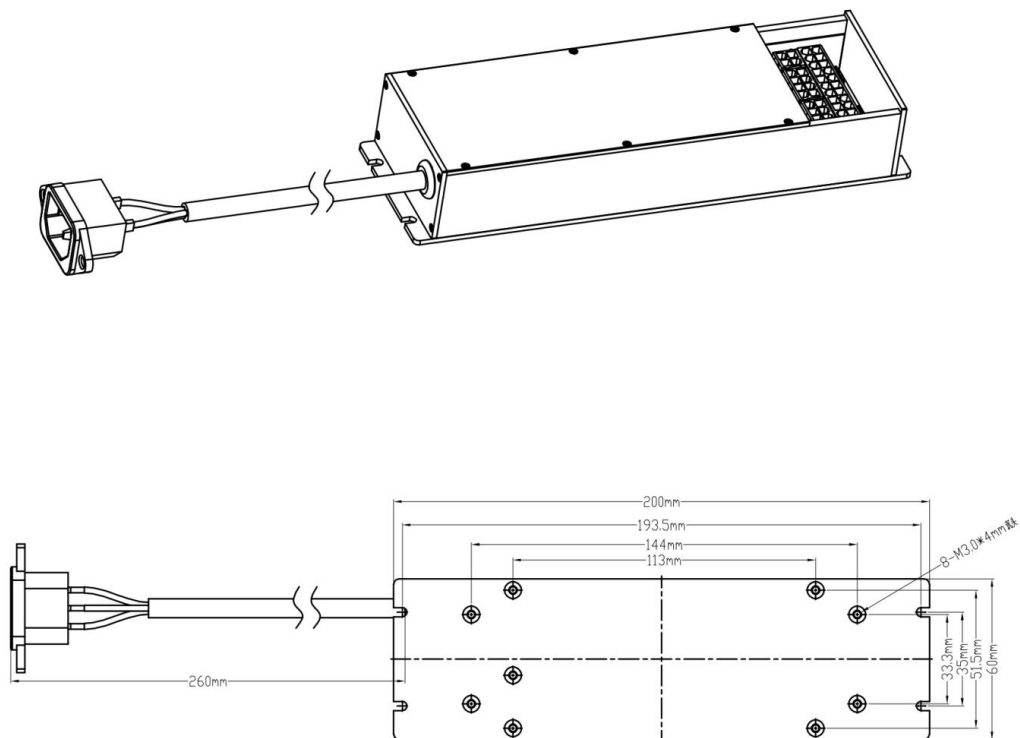
SYNCHRONIZATION

Multiple power supplies can be used in parallel to deliver larger power for a single computer, by connecting together the NPSON and GND signals on J2 4-pin connectors.

CONTACT

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