

RAPID MODIFICATION & VALUE-ADDED ENGINEERING SOLUTIONS

QUICKLY GO TO MARKET WITH POWER PLATFORMS THAT KEEP YOU
AHEAD OF THE CURVE



Rapid Modification & Value-Added Engineering Solutions

Come in on schedule and on budget with Advanced Energy's proven Rapid Modification & Value-Added Engineering Solutions. We'll help you get to the finish line first!

Why use a Modified Standard Power Supply?

Time-to-market, reliability and costs have the greatest impact on your ROI. Fully custom solutions can delay your time-to-market and undermine your competitive advantage. Avoid paying custom development costs with an Advanced Energy modified standard power supply.

Advanced Energy has you Covered

No matter what type of power supply you need, Advanced Energy has you covered.

While Advanced Energy's Artesyn, Excelsys, SL Power and UltraVolt product lines offer a broad range of standard products with output power from 0.1 W to 30 kW and output voltage of up to 60 kV

that address the needs of many industries, there are occasions when a standard product does not address all your application requirements. A custom solution may not be economical or meet scheduling needs. By using proven standard platforms as building blocks, Advanced Energy can develop cost-effective turnkey power solutions that meet your exact needs.

Why Advanced Energy

Advanced Energy is committed to providing you with power supply solutions that offer the lowest total cost of ownership in the industry. We achieve this through:

- Over 40 years of experience in developing standard, modified, and custom power supplies
- Broad product line of over 3,000 power supplies to choose from
- Advanced technology
- Superior design
- Leading-edge product performance
- Unsurpassed technical support

Modified Advantage

What you will get from Advanced Energy modified power supplies:

- Broad portfolio of power supplies to leverage from
- Quick time-to-market vs. custom solutions
- Low risk – using proven reliable platforms as building blocks
- Cost effective (lower development cost)
- Quality, high reliability products
- Gain a competitive advantage

Embedded Power Selector Guide

AC-DC

CONFIGURABLE

UltiMod

Up to 1200 W
1 to 12 Outputs



iMP Series

Up to 1500 W
1 to 21 Outputs



uMP Series

Up to 1800 W
Up to 12 Outputs



CoolIX1800, CoolIX3000

Up to 3000 W
Up to 12 Outputs



iVS Series

Up to 4920 W
1 to 24 Outputs



iHP Series

Up to 30 kW
Up to 8 Outputs



CoolX600 CoolX1000

Up to 1000 W
6 Outputs
Fanless



XF Series

Up to 6 Outputs
1000 W
MIL Standards



NeoPower

Up to 4000 W
Up to 8 Outputs



RACKS

Open Rack Power Shelf and Rectifier

1 U 18 kW or 33 kW
Power Shelves
Accepts up to 6, 3 kW
or 5.5 kW Rectifiers

HPR12K

1U, 12 kW
Accepts 4 HPS3000

LCM12K

1U, 4kW

Evergreen FCM30k

2U, 30kW



BULK/DISTRIBUTED/ENCLOSED

LCM Series

300, 600, 1000, 1500,
3000, 4000 W
85 to 528 VAC
12 to 300
VDC



Xsolo/Xsolo BF Series

500, 1000 W
85 to 264 VAC
120 to 380 VDC



TF Series

800, 1500,
3000 W
90 to 264 VAC
12 VDC up to 400 VDC



HPS Series

1 to 3000 W
90 to 264 VAC
48 VDC



Evergreen FCM Series

0 to 10 kW
187 to 528 VAC,
3 Phase 3 Wire + PE



CRPS Series

550, 800, 1300, 1800,
2000, 2400, 3200 W
90 to 264 VAC or
240 VDC, 48 VDC-in
12 VDC



M-CRPS Series

1800, 2400, 3200,
3600 W
90 to 264 VAC or
240 VDC, 48 VDC-in
12 VDC or 54 VDC



OPEN FRAME

2 x 4

NPS20-M/40-M/60-M
20 to 60 W

GB40

Up to 40 W

NPT40-M/LPT100-M/
MINT3110
40 to 130 W Triple
Output

LPS100-M

Up to 150 W

SLB125

Up to 125 W

NGB150 / 250

150 to 250 W

LU225

Up to 225 W

CPS250-M

Up to 250 W



4 x 6

CNS650-MU

400 to 650 W

NGB660

560 to 650 W



3 x 5

LPS40/40-M/60/60-M
/200-M/250-M/360-M
40 to 360 W

LPT60

60 to 80 W

GB130Q / LPQ200-M
130 to 200 W Quad
Output

TLP150

100 to 150 W

SLB300

300 W

NGB425

365 to 425 W



5 x 8

NGB800

800 W Single Output

3.3 x 10.8

NGB1200

1200 W Single Output

CF Rated

NCF Series

Up to 660 W Single
Output

Other Products/Sizes

GB10P - 1" x 2"

10 W PCB Mount
Single Output

GB10 - 1.6" x 3.4"

10 W to 12 W Single
Output

GB20 - 1.6" x 3.4"

15 W to 20 W Single
Output

GB30 - 1.9" x 4.0"

20 W to 30 W Single
Output

SLB65 - 2" x 3"

40 W to 65 W Single
Output

MB65 - 2" x 3.5"

65 W Single Output

FANLESS/ CONDUCTION COOLED

LCC250

250 W



LCC600

600 W



LCC1200

1200 W



CS1000

1000 W



CAPACITOR CHARGER

FlexiCharge

Up to 4 kJ Capacitor
Charger
Up to 4800 W Total
Power



BENCH

iLS Series

600 W, 1500 W



ADAPTERS

AD, DA, DP Series

10 to 100 W

GE Series

Up to 150 W
Medical & ITE
Safety Appr.

ME / TE Series

Up to 240 W
Medical / ITE

SLE

Up to 90 W
Medical & ITE

MENB

Up to 60 W
Medical
Level V

PW

Up to 20 W
PoE



DC-DC

LOW VOLTAGE

PFC

Full Brick; AIF 1600 to 2400 W
3/4 Brick; AIT 150 W
1/4 Brick; AIQ 75 W



High Power

Full Brick; AIF 600 W
3/4 Brick; AIT
1/2 Brick; AIH 250 W
1/4 Brick; AIQ



Telecom DC-DC

1/16th brick 35 to 200 W; ALD/AVD
1/8th brick 50 to 300 W; AVO/ADO
1/4 brick 50 to 800 W; AVQ/ADQ/
1/4 brick Bus converter 900 to 1300 W; BCQ/BDQ/NDQ
1/2 brick 300 to 1300 W; AVE/ADH
Full brick 500 to 800 W; AGF



Industrial DC-DC

0.5 by 0.5 DIP 3W; AYA
0.9 by 0.5 DIP 3W; AYA
1.2 by 0.8 DIP 24 6 W, 10 W; ASA
1 by 1; 10 W, 20 W, 25 W; AXA
1 by 2; 15 W, 40 W, 50 W; AEE
1.6 by 2; 25 W, 30 W; AET



Direct Conversion - PSA Series

100 A; ADC



AC-DC Board mount

Full brick 500W AIF



Non-isolated DC-DC

C2-class LDO, 3 A, 6 A, 10 A and SMT/SIL,
20 A, 40 A
LGA**C class, 3 A, 6 A, 10 A, 20 A
LGA**D class, 50 A, 80 A, 110 A



Medical DC-DC

0.8 by 1.2; Medical
6 W; ASA
1 by 2; Medical 15 W,
20 W; AEE



Railway DC-DC

1 by 2; Railway
10 W, 20 W; ERM
1/4 brick Railway
50 W, 75 W; 100W
150W ERM



HIGH VOLTAGE

Miniature DC/DC

AEQ, US, V, M, D, MPM
Series
Output Voltage 62 V to
6 kV



Medium Power

AA, A, 10A-15A,
20A.25A, LE, E Series
Output Voltage: 62 V
to 40 kV



High Power DC/DC

C, High Power C, High
Power 8C-30C, High
Power 40C-60C Series
Output Voltage: 125 V
to 60 kV



High Voltage Amplifiers

HVA Series
Output Voltage: Up to
20 kV Unipolar &
Bipolar



Modified Solutions

Advanced Energy provides modified standard products and value-added solutions in varying degrees of complexity. These meet specific customer needs in a wide range of applications, such as:



Communications

- Access solutions
- Enterprise networking
- Wireless
- Wireline
- Optical



Medical

- Electrosurgery
- Imaging
- Life science
- Lasers
- Surgical Robotics



Industrial

- Test & measurement
- Semiconductor
- Robotics
- Indoor horticulture



Lighting & Signage

- Displays
- Illuminated signs



Aero

- Avionics
- In-flight entertainment



Capabilities

The exact specifications you require that's within your budget and reliability standards.



Electrical Parameters

- Output voltage setting
- Low noise
- Power & efficiency upgrades
- Hot swap control
- Inrush current control
- Integrated PDU assemblies
- Compliance to industry standards



Packaging

- Conformal coating
- Custom chassis/sled
- Ruggedization for shock, vibration, and hazardous locations
- Shielding for high magnetic environment
- Sealed/IP rated enclosures
- Customized print/marketing/labels



Connectivity

- Cable wire assemblies
- Connector changes
- Busbar design
- Overmoulding
- Interposer boards



Communications & Control

- Logic signal/timing changes
- Adaptive fan control
- Output sequencing
- Peak load/efficiency optimization

Rapid Modification and Value-Added Engineering Solutions Examples

AC-DC



- Application: Networking - Routers
- Base Supply: NPS42-M
- Modifications:
 - Factory preset of output voltage to 5.1 V



- Application: Computing
- Base Supply: NLP250N-48S12J
- Modifications:
 - Replace input connector with cable wire assembly terminated with customer-specified connector



- Application: Laboratory Equipment
- Base Supply: iVS1
- Modifications:
 - Configured iVS1 supply mounted on customized chassis with special connectors and accessories



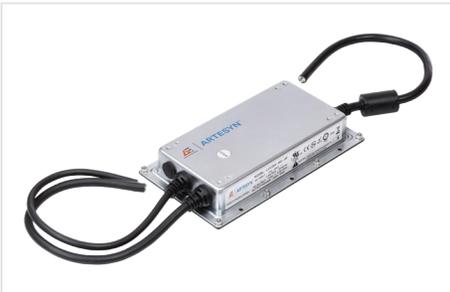
- Application: ATM
- Base Supply: LCM600U-4
- Modifications:
 - Output connector change
 - Firmware changes for load adaptive fan speed, logic signal, and timing changes
 - Additional safety standard certification



- Application: Network Switch
- Base Supply: LPS203-M
- Modifications:
 - Output connector change
 - Custom slide enclosure with fans, AC inlet, switch, and output connector
 - Safety approvals on finished product



- Application: CT Scanner
- Base Supply: iMP8
- Modifications:
 - Output connector change
 - Customer-specified enclosure, connectors, and accessories
 - Ruggedization for shock and vibration



- Application: In-flight Entertainment
- Base Supply: LCC250-48U-7P
- Value-Add:
 - Output connector change
 - Customer-specified enclosure and accessories
 - Value-Add design for RTCA DO-160F compliance



- Application: Precision Heating and Bias Supply for RF Amplifiers used in Plasma Generation
- Base Supply: iHP12H3A and iHP24SH3A
- Value-Add:
 - Special chassis and connector systems
 - Special isolation for use with electrostatic chuck
 - Application specific interlocks and EtherCAT implementation



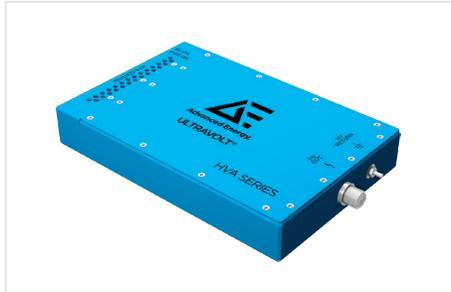
- Application: SEMI Process Chambers
- Base Supply: iMP1 Config
- Value-Add:
 - 19" rack enclosure with multiple output voltages at rated current
 - Customized circuit breakers and connectors
 - Front panel with test points, power LEDs, and a silkscreen indicating each function

Rapid Modification and Value-Added Engineering Solutions Examples

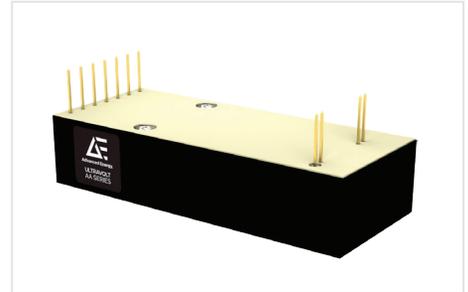
DC-DC



- Application: Super-compute DCDC
- Base Supply: BDQ1300
- Modifications:
 - Change of baseplate
 - Change of protection features to tune the product to the application



- Application: Electrophoresis Instrument
- Base Supply: 15HVA24-BP1.5
- Modifications:
 - Addition of large O.D. HV cable to eliminate cable microdischarges and corona/ozone production
 - Special HV output connector and customer-specified mounting flange



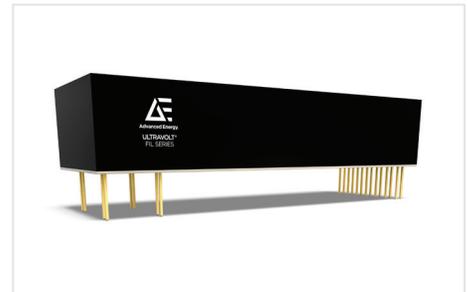
- Application: Metrology
- Base Supply: 1AA24-N30-I5
- Modifications:
 - Modified output stages to withstand frequent and severe output arcs
 - Modified feedback with open loop transient limit
 - Changed SMT interconnect to thru-hole header for increased reliability



- Application: Aerospace (Aircraft Wing De-Icing System)
- Base Supply: 1/2C24-N250-I5
- Modifications:
 - Increased output power from 250 to 275 W
 - Changed I/O connector to Molex
 - Added top-mounted unit mounting stud
 - Customer notification of any changes and copies of all test results sent to customer



- Application: Shockwave Lithotripsy
- Base Supply: 25C24-N250-I10
- Modifications:
 - Output cable replaced with 20" HV wire
 - Added reverse output voltage protection clamp diodes
 - I/O logic signals changed to reverse logic to accommodate customer's communication protocols



- Application: E-Beam Wafer Inspection System
- Base Supply: FIL-5V-3A-M
- Modifications:
 - Output current re-ranged to 2.6 A with 10 V current programming
 - Filament center-tap isolated from ground
 - Added integrated precision shunt resistor for filament current measurement



- Application: In-Flight Entertainment
- Base Supply: AIT00ZPFCx-x, AIT04RF300L
- Value-Add:
 - PCB assembly with bricks, EMI filter, and Hold-Up caps
 - Special connectors and sealed enclosure
 - RTCA-DO160 compliance



- Application: CT Scanner
- Base Supply: AIF-PFC and AIF-DCDC
- Value-Add:
 - Full PSU with multiple outputs developed based on standard products that are optimized for contact-cooling



- Application: RFPA stand-alone DCDC
- Base Supply: ADQ500-48S12B-6LI
- Value-Add:
 - DCDC product integrated into a case with required external components resulting in a stand-alone contact-cooled 48 Vin, 12 Vout PMBus controlled unit



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ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than four decades to perfecting power for its global customers. We design and manufacture highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE | TRUST

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