



# ELECTRICAL POWER SOLUTIONS

EFFICIENT PACKAGING

ENVIRONMENTAL DURABILITY

SUPERIOR SWaP

MISSION CRITICAL



Crane Aerospace & Electronics delivers mission-critical and innovative components, systems, and services for commercial aircraft, defense, and space markets. Products and services are organized into six integrated solutions: Cabin Systems, Electrical Power Solutions, Fluid Management, Landing Systems, Microwave Solutions, and Sensing Components & Systems.

- High current overload capability (typically 150% for 2m and 200% for 5s)
- Compatible with pulsed/dynamic loads

#### **Auto-Transformer Units (ATUs)**

Simple and efficient bi-directional AC to AC step up and step down conversion

- AC step up 115 Vac to 235 Vac
- AC step down 235 Vac to 115 Vac
- Output power: 5 to 100 kVA
- Efficiency: >98%
- Phase load imbalance correction
- Low transfer impedance

## **POWER CONVERSION**

Meets latest power quality requirements

Cooling methods: baseplate, internal fan, forced air and liquid

Standalone or integrated configurations

Compatible with variable frequency generators (360—800 Hz)

Options: filtering, contactors, soft start, on/off control, protection

Meets EMI Requirements of RTCA/DO-160 and/or MIL-STD-461

Mature building blocks quickly configurable and scalable

Parallelable in excess of 500kW

Output power from the AC-DC (PFC) is 16kW to 32kW

#### **Auto-Transformer Rectifiers (ATRU)**

Non-isolated passive AC to DC conversion for motors, actuation, pumps, fans and other dedicated loads

- Input voltage: 115 Vac or 230 Vac
- Output voltage: 270 Vdc or 540 Vdc
- Output power: 1 kW - 250 kW
- Efficiency: 98%+
- Power Factor: >0.98 (depending upon configuration and power level)
- Input current distortion (THD): 12 pulse <12%; 18 pulse <7%; 24 pulse <5%; 30 pulse <3%
- High current overload capability (typically 150% for 2m and 200% for 5s)
- Compatible with pulsed/dynamic loads

#### **Transformer Rectifier Units (TRUs)**

Isolated passive AC to DC conversion for DC power

- Input voltage: 115 Vac or 230 Vac
- Output voltage: 28 Vdc or 270 Vdc
- Output current: 10 A to 400 A
- Efficiency: 85 to 92%+
- Power Factor: >0.96 (depending upon configuration and power level)
- Total harmonic distortion (THD): 12 pulse <12%; 24 pulse <5%

#### **Active Regulated Transformer Rectifier Units (RTRUs)**

Isolated active AC to DC regulated conversion for DC power

- Input voltage: 115 Vac or 230 Vac
- Output voltage: 28 Vdc or 270 Vdc
- Output current: 200 A to 400 A
- Efficiency: 85 to 90%+
- Power Factor: >0.90 (depending upon power level)
- Total harmonic distortion (THD): 12 pulse <12%; 18 pulse <7%; 24 pulse <5%; 30 pulse <3%
- High current overload capability (typically 150% for 2m and 200% for 5s)

#### **Active Input Power Factor Correctors (PFC)**

Isolated active 3-phase power factor correction conversion to high voltage DC power

- Input voltage: 208 Vac or 440/480 Vac
- Output voltage: 400 Vdc or 800 Vdc (regulated)
- Output power: 15 kW or 25 kW

#### **DC-DC High Power Converters**

Isolated active regulated high power conversion

- Input voltage: 270 Vdc, 400 Vdc, 600 Vdc, 800 Vdc
- Output voltage: 6 Vdc to 600 Vdc
- Output power: 1 kW to 30 kW with parallel capability up to 250 kW
- Efficiency: 95 to 97%+

#### **Hi-Rel Aerospace & Defense**

##### **DC-DC Low Power Converters and EMI Filters**

Interpoint brand standard high reliability DC-DC converter and EMI filter modules for defense, commercial aerospace, and industrial applications

- Input voltage: 3 Vdc to 400 Vdc
- Output voltage: 0.8 Vdc to 28 Vdc; adjustable, single or multiple outputs available
- Output power: 1 W to 120 W with parallel capability up to 540 W
- Efficiency: up to 90%+
- Qualified to MIL-PRF-38534 Class H

### Space DC-DC Low Power Converters and EMI Filters

Interpoint brand standard high reliability DC-DC converters and EMI filter modules for space applications

- Input voltage: 3 Vdc to 400 Vdc
- Output voltage: 0.8 Vdc to 28 Vdc; single or multiple outputs available
- Output power: 1 W to 100 W with parallel capability up to 285 W
- Radiation hardness assurance (RHA) to Level R 100krad (Si)
- Qualified to MIL-PRF-38534 Class H and K

### Low Voltage Power Supplies

Custom or semi-custom designs capable of withstanding the severe environments found in aerospace and military applications

- Input AC voltage: 115 Vac, 230 Vac
- Input DC voltage: 28 Vdc, 270 Vdc, 540 Vdc
- Output voltage: 3 Vdc to 540 Vdc
- Output power: 500 W to 3 kW
- Efficiency: 90 to 97%+

### High Voltage Power Supplies

Custom or semi-custom designs capable of withstanding the severe environments found in aerospace and military applications

- Input AC voltage: 115 Vac, 230 Vac
- Input DC voltage: 18 Vdc to 270 Vdc
- Output voltage: 1 kVdc to 30 kVdc, multiple outputs
- Output power: 1 W to 100 W
- Efficiency: 70%+
- Dynamic focus capability

### Traveling Wave Tube (TWT) Power Supplies

Custom developed to integrate with ECM, radar transmitters and satellite high Power communications amplifiers driving TWTs

- Input voltage: 28 Vdc or 115/208 Vac
- Output power: 1 to 12 kW
- Output voltage: up to 35 kV
- High efficiency: up to >90%+
- Acoustic noise: down to <70 dBc
- Power density: up to 13 W/inch<sup>3</sup>
- Drive up to 2 TWTs for radar and communication applications
- Drive up to 24 TWTs for ECM application

## ENERGY MANAGEMENT

---

### Battery Chargers and Battery/Battery Charger Subsystems

Federated and integrated battery chargers and battery subsystems for lithium-ion, nickel cadmium and lead-acid solutions for main/emergency battery and APU start subsystems. Solutions include fault isolation, BIT and communication.

- AC input voltage chargers
  - Input voltage: 115 Vac
  - Output voltage: nominal 28 Vdc
  - Battery Charger Efficiency: 92%+
  - Manage 20 Ahr to 70 Ahr batteries
  - Charge mode and TRU mode
- DC input voltage controllers
  - Input voltage: 28 Vdc
  - Output voltage: nominal 28 Vdc
  - Efficiency: 95%+
  - Manage 20 Ahr to 70 Ahr batteries

## POWER SUBSYSTEMS

---

### Power Management & Distribution Subsystems

Integration of power conversion, management, storage and distribution functions

- Provides high integrity, uninterruptible power requiring redundancy, backup, communications and health monitoring
- Automatically selects prioritized input power from primary, secondary, back-up and fill-in input sources
  - Variable frequency, variable-voltage AC input
  - 28 Vdc inputs
  - Dedicated 28 Vdc back-up battery
- Multiple, load-sharing regulated output converters
- Integrated battery management and charging
- Load distribution controlled and protected by Solid State Power Controllers (SSPCs) and/or circuit breakers
- Status monitoring and commanded Built-in test (BIT)
- Orderly start-up and shut-down
- Fully integrated high power cabinets
- DO-254 Level A

PLATFORMS *	POWER CONVERSION	ENERGY MANAGEMENT	POWER SUBSYSTEMS
A220, A310, A329, A320, A330, A340, A350, A380	→		
A400M	→		
AH-64	→		
ARJ 21	→	→	→
B-1B	→	→	
B-2	→		
B-52		→	
B707, B717, B727, B737, B737MAX, B747, B757, B767	→	→	
B777/B777X	→	→	→
B787	→		→
C-130	→		→
C-17	→		
C919	→		→
CH-47		→	
CN-235	→		
CRJ	→	→	
DC10	→		
Embraer E170/190	→	→	→
Embraer E2	→		
F/A-18	→		→
F-15	→		→
F-16	→		
F-22	→		
F-35	→		
Global 5000/6000	→	→	
Gulfstream G450, G550	→	→	
Gulfstream G500, G600, G650	→		
H-60	→	→	
KC-135	→	→	
MD-11	→		
MD-80, MD-90	→		
Mitsubishi SpaceJet	→	→	→
S-92	→		
Undisclosed Military	→	→	→
V-22	→		

\* Partial listing of platforms

## POWER CAPABILITIES

- Power conversion design, test and manufacture
- Custom, semi-custom, and off-the-shelf products
- High integrity, uninterruptible power
- Power subsystems design incorporating integration of power conversion, distribution and storage
- Design for high reliability, low noise, and low distortion
- Battery management systems integration
- DO-254 Level A product development
- DO-178 Level A software development

## POWER APPLICATIONS

ATA24 power conversion, distribution and energy storage

Actuation, Motors, Fans, Blowers

Avionics, Weapons, and Utilities

Displays

Flight Controls

Cabin Systems

AESA and TWT Radars

Electronic Counter Measures

C4ISR

Directed Energy

High Energy Laser

Motive power for Combat and Tactical Vehicles

Mobile Grid

## MARKETS SERVED



COMMERCIAL AVIATION



DEFENSE



SPACE

## HERITAGE BRANDS

ELDEC ■ Interpoint ■ Keltec

## FOR MORE INFORMATION

Rodney Mack (Rodney.Mack@CraneAE.com)

Crane Aerospace & Electronics

16700 13th Avenue West

Lynnwood, WA 98037 USA

(+1) 425-743-8563

[www.craneae.com](http://www.craneae.com)