



SERIES 2500+
THE ULTIMATE
GROUND POWER UNIT



 CAVOTEC

GOING BEYOND THE HORIZON WITH CAVOTEC SERIES 2500+ GPU

Airports are an integral part of national and global transport infrastructure. The aviation industry needs to plan for its future development in this context. Key issues facing the sector include improving turnaround times, reducing emissions, operational expenditures, and enhancing safety.

With the Cavotec 400Hz Ground Power Units Series 2500+, we offer to the industry the ultimate 400Hz solid state frequency converter integrating the highest electrical and communication performances.



The 2500+ meets the needs of today's and tomorrow's demanding aviation industry.

- **3G Ready:** Global design for Global clients in a Global market.
- **NGA Ready:** New Generation Aircraft (A380, B787, A350), ISO6858 Ready, 500% overload.
- **90kW (PF 1):** continuous load at 60°C ambient temperature.
- **28VDC (TRU):** Integrated transformer unit for regional aircraft and helicopters power supply.

Enhanced with Cavotec Skyway, Cavotec Series 2500+ combines increased reliability, optimizes ground handling operations and maximizes profitability.

- At the forefront of the energy savings with **>94% overall efficiency**.
- Cavotec Skyway Interface: **visualization of diagnostics, connections, and operations remotely.**
- Interconnected digital technologies with data collection for preventive maintenance for a **reduced OPEX.**
- Durable design for **maximizing gate utilization** and **Return On Investment.**

Series 2500+ is offered with the 3 following configurations:

- 2500+: 400Hz power
- 2500+ DC Combi: 400Hz + 28VDC Power
- 2500+ PowerPack I-Connect: 400Hz power with an integrated 400Hz coiler

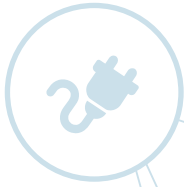
Clean, reliable, and sustainable 400Hz power.



Series 2500+
PowerPack I-Connect



Cavotec Skyway Interface



Clean, reliable, sustainable, and secured 400Hz electricity delivery

Cavotec Series 2500+ GPU offers with its **pulse-width modulated** proven technology an advanced 400Hz power solution ensuring the unique 400Hz power will be delivered **reliably without unforeseen changes in quality**.

Designed for **all ambient conditions** and aircraft types including **New Generation Aircraft (NGA)**, the Series 2500+ delivers **90kW PF 1 continuous at 60°C** and can go **up to 500% overload** bringing **peace of mind** to airlines and ground handling operators.

When configured with Series 2500+ DC Combi unit, we offer an integrated solution for powering both commercial and regional aircraft with either 90kW or 28VDC.



3G ready: Global design for Global clients in a Global market

Cavotec 2500+ solid state frequency converter can service all types of aircraft (up to A380, including B787 & A350) under the **most severe ambient conditions** (-40°C to +60°C at PF 1) with a **continuous 90kW** output power and around the globe with 50/60Hz input and dual output.

The unit complies with the highest industry standards of which **DFS-400, MIL-STD-704F & exceeds the ISO-6858**.

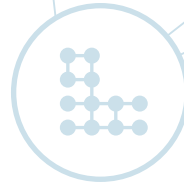
ONE technology providing **ALL solutions** to **ALL** types of **airport** designs and configurations.

>94%
Efficiency



Allocating the right investment for reducing operating expenses and maximizing the revenue streams

We value the importance of providing a **sustainable solution** where the **lower energy associated with a reduced consumption (overall efficiency of >94%), maintenance and downtime** bring **considerable savings and an unprecedented reduced Total Cost of Ownership** to the industry.



Technology integration

Cavotec Series 2500+ has been engineered and **pre-programmed** for all types of 400Hz power **distribution systems** such as **400Hz coilers and pit systems**. The **embedded** functions in the **system logic** enable a **fast site deployment** and **wiring for trouble free 400Hz system start-up**.

Cavotec, world's leading Ground Support System provider



Series 2500+
Vertical ground mounted



Series 2500+ DC Combi
Horizontal PBB mounted



Series 2500+
PowerPack I-Connect



400Hz Centralized MGs



Digitising the 400Hz Ground Power Unit

Cavotec Series 2500+ equipped with **Cavotec Skyway (5.7" sunlight readable multicolour display) and Cavotec Skyway Operator Terminal** provide a new way of operating. The addition of the **remote operation** enhances the **operations safety** and the **real time system monitoring**.

The **multiple functionalities and flexibility** of the Cavotec Skyway provide **digital information** that will guarantee **live information on the GPU and proactive maintenance** plans for **maximizing the gate utilization and revenues**.

Updates can be done in two ways: Basic mode with a **USB/Flash drive**, and Advanced mode with an ethernet connection.

500%
overload

90kW
PF 1



Advanced manufacturing

Cavotec offers clients the possibility to **have factory tested products on two continents**, but also the complete 400Hz system (i.e. Test of 400Hz system including the GPU connected to a pit system) ensuring the **total reliability** of the **system performance** before shipment. Our products are **serviced by Cavotec local sales offices** located in **over 30 sales** companies for a **professional and reliable** local after-sales service.

The world's largest in-house 400Hz versatile system offer



400Hz Pop-up Pit



400Hz Coiler



400Hz Power Converter Caddy



400Hz Aircraft Plugs

Technical Information - 2500+ Series

Input Power

Voltage range:	3 x 400-480V \pm 15%
Frequency:	50/60 Hz \pm 5 Hz
Rectification:	Active PFC
Rated current:	115A @ 480VAC And 90kW (1.0PF) 138A @ 400VAC And 90kW (1.0PF) 92A @ 480VAC And 90kVA (0.8PF) 111A @ 400VAC And 90kVA (0.8PF)
Line current distortion:	<2% @ full load*
Power factor:	1 @ any load*
Inrush current:	None

Output Power

Rated power:	90kVA/90kW
Voltage:	3 x 115/200V
Frequency:	400Hz \pm 0.01%
Power factor:	0.5 lagging to 0.8 leading*
Voltage regulation:	<0.5% for balanced load & up to 40% unbalanced load
Voltage recovery:	U <2% and rec. time <10 ms at 100% load* change
Total harmonic content:	<2% at linear load (typ. 1.5%) <2% at non linear load according to ISO1540
Crest factor:	1.414 \pm 3%
Voltage modulation:	<1.0%
Phase angle symmetry:	120° \pm 1° for balanced load 120° \pm 2° for 30% unbal. load
Voltage drop compensation:	>20V phase to neutral

Output Power 28VDC

Voltage:	28 VDC
Current:	600A
Voltage regulation:	<0.5%
Voltage ripple:	<1.5%
Voltage transient recovery:	In compliance with ISO 6858 and MIL-704F

Efficiency

Overall efficiency:	>94% 90kVA at 0.8PF
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Overload Capability

125% for 600 seconds	400% for 3 seconds
150% for 90 seconds	500% for 1.5 seconds*
250% for 30 seconds	Follows I ² t curve
300% for 15 seconds	

Overload Capability 28VDC

750 A for 600 seconds	2400 A for 10 seconds
1500 A for 90 seconds	3000 A for 2 seconds
1800A for 20 seconds	

Environmental

Operating temperature:	-25°C to +60°C for all load conditions
Relative humidity:	10 to 100% non-condensing
Noise level:	<65 dB(A)@1m

Norms and Standards

MIL-STD-704F:	Aircraft Electrical Power Characteristics
DFS-400:	400Hz aircraft ground power
ISO-6858:	Aircraft Ground Power Supplies
ATA-101:	Ground equipment technical data
NFPA 70:	National Electrical Code
UL 1012:	Under Writers Laboratories, INC. (UL)
BS 2G 219:	General Requirements for Ground Support Equipment
EN-62040 1.1:	Uninterruptible power systems (UPS) –Part 1-1: General and safety requirements for UPS used in operator access areas.
IEEE STD 127:	Aerospace Equipment and Frequency Rating
ISO-461:	Connectors for Ground Electrical Supplies
ISO-1540:	Aerospace. Characteristics of Aircraft Electrical Systems.
SAE-ARP-5015:	Ground Equipment 400Hz Ground Power Performance Requirements
EN-1915-1:	Aircraft ground support equipment. General requirements. Basic safety requirements.
EN-12312-20:	Aircraft ground support equipment. Specific Requirements. Part 20. Ground Power Equipment.
IEC 61800-5-1:	Adjustable speed electrical power drive systems. Safety requirements; electrical, thermal, energy.
Others:	
	MIL-S-19500 – IEC-60146 – ST-20-1972(R-1978) – IEC-60310 EN-50124 EN-61000 – IEC-60529 – BS-EN-61558 – IEEE STD 500 – UL508A

Protection

Protection class: IP55	Control voltage error
No break power transfer	Short circuit at output
Over/under voltage at in/output	Neutral voltage supervision
Input/output overload	
Internal high temperature	

Miscellaneous

MTTR:	max. 20 minutes
Colour:	RAL 9010 (standard)

Weight

Fixed & PBB units:	570kg / 1,257lbs
Mobile units:	770kg / 1,698lbs
2500+ DC Combi:	762kg / 1,680lbs

Dimensions

2500+:	48x30x30 in / 1220x760x760 mm
2500+ DC Combi:	73x30x30 in / 1854x760x760 mm
2500+ PowerPack:	71.2x50.9x40.2 in / 1809x1292x1022 mm

Warranty

	Standard 12 months warranty
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*All characteristics are valid for an altitude up to 3000m (10000 ft)



3G and NGA Ready



90kW, 500% overload



Remote monitoring with Smartphones and tablets

Optional Features

- Dual 400Hz output
- Terminal extension for output distribution
- Remote HMI with Cavotec Skyway Interface
- Cover for instrumentation
- TCP/IP Modbus ready
- Military interlock
- GPU user enable
- Energy Management
- Leakage current supervision
- 90% switch interlock
- Cavotec Skyway service tool
- BMS integration
- Portable trailer/cable kit
- 180kVA Kit
- 28VDC TRU (Combi)
- Beacon indicator
- Low usage power saving mode

Cavotec Skyway

Cavotec Skyway is a modern and easy system visualization which has been developed with the aim of offering extensive connectivity, easy-to-read displays, and remote connectivity via Ethernet/Internet Remote Connectivity.

We bring you the information in real time wherever you are and on various interfaces (Smartphones, Tablets...) for ensuring an instant system information.

The 5.7" High Brightness TFT Graphical Touch Screen will allow you to communicate with your 2500+ 400Hz Solid State Frequency Converter and offers our customers extensive, built-in, time-saving features that help customers develop fast and consistent GSE in operation. Extend the system to other Cavotec GSE (i.e. Cavotec PCA) and you will complete the winning combination with a unique Gate Vision System.

Installation Data

Cavotec Series	Continuous Rating (kVA) / (kW) / (kW 28VDC)	Input Amps with full load (90kVA) at the output 0.8 PF / 1.0 PF		Dimensions W x D x H		Installed Weight	
		@ 400V input	@ 480V input	(inches)	(millimeters)	(lbs)	(kg)
2500+	90/90	138A @ 400VAC and 90kW (1.0PF) 111A @ 400VAC and 90kVA (0.8PF)	115A @ 480VAC and 90kW (1.0PF) 92A @ 480VAC and 90kVA (0.8PF)	48x30x30	1220x760x760	1257	570
2500+ PowerPack I-Connect*				71.2x50.9x40.2	1809x1292x1022	1985	900*
2500+ DC Combi (90kVA/28VDC)	90/90/17			73x30x30	1854x760x760	1680	762

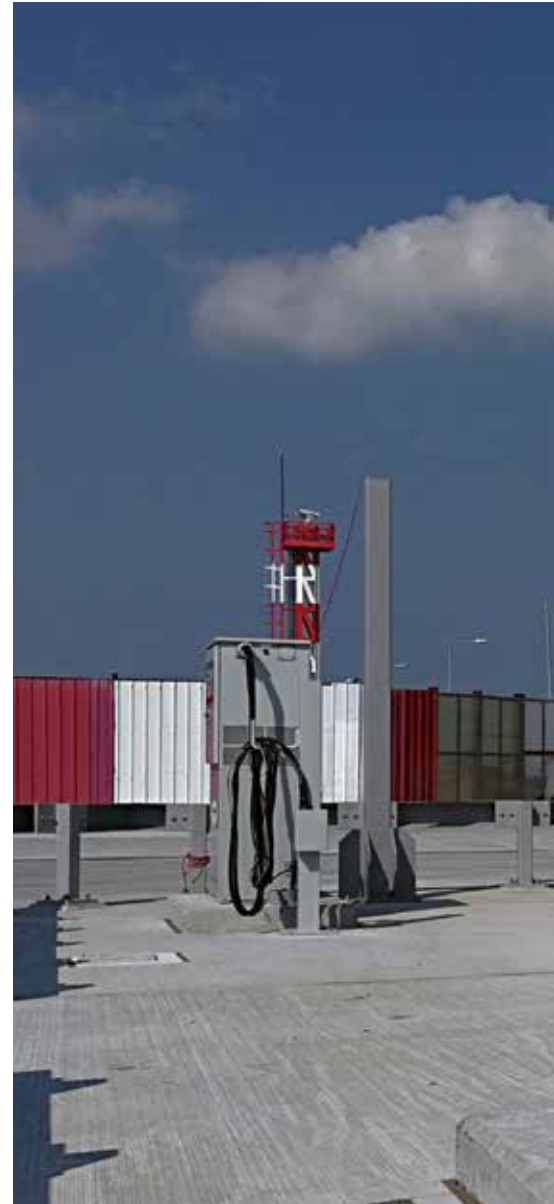
* data without cable

Model Numbers

	Output	Continuous Rating (kVA) / (kW) / (kW 28VDC)	Bridge mounted (Horizontal)	Ground mounted (Vertical)	Mobile (Horizontal)
2500+	Single	90/90	25C90S-HB	25C90S-VG	25C90S-HM
	Dual		25C90D-HB	25C90D-VG	25C90D-HM
2500+ PowerPack I-Connect	Single		25P90S-HB	25P90S-VG	25P90S-HM
2500+ DC Combi (90kVA/28VDC)	Single	90/90/17	25C90S-HB-286	25C90S-VG-286	25C90S-HM-286

We are present in:

Australia	Germany	New Zealand	Switzerland
China	Hong Kong	Norway	Turkey
Denmark	India	Singapore	UAE
Finland	Italy	Spain	UK
France	The Netherlands	Sweden	USA



cavotec.com

Disclaimer: specifications are subject to change without notice