

**400Hz & 28Vdc GROUND BIPOWER UNIT**

ELIT Srl designs and manufactures 400Hz & 28Vdc static frequency converters since 1987. To complete the airfield range of products are available 270Vdc ground power units, constant current regulating units (CCR) for ground lighting and control systems for commercial and military airports. All the equipment is distinguished by the use of technologically advanced components, reliability, and ease of maintenance.

PRINCIPLES OF WORKING

The bipower FC400 + SE 28 GPU can simultaneously power users by converting the input network voltage to 50 / 60Hz, in an output voltage of 400Hz and 28Vdc; the two outputs are galvanically isolated, completely independent in regulation and operation and can work simultaneously. The output voltage at 400Hz is stabilized in voltage, quartzed in frequency and with low harmonic content in tension. The DC voltage

output at 28VDC is stabilized, with ripple voltage of less than 1%.

FEATURES

- Galvanic input / output isolation
- Three-phase input voltage without neutral.
- High performance.
- High overload capacity.
- Analyzer with 128x112 pixel graphic LCD, touch-screen, harmonic analysis.
- Emergency Power Off.

As an option

- Two independent and automatic Voltage Compensations (DLC) 400Hz and 28Vdc.
- Two remote Point of Reaction (POR) at 400Hz and 28Vdc independent.
- Two interlocks with the possibility of independent EF bypasses at 400Hz and 28Vcc
- Remote control
- UPS mode with battery
- Power history
- RS485, RS232, SNMP and I / O communication interface

CONTROL PANEL

The converter is equipped with a backlit liquid crystal display, optional touch screen for 400Hz output and an LCD panel for 28Vdc output. The display is divided into four menus, accessible with the corresponding function keys.

The main measures at 400Hz are:

voltage (phase voltage, phase-to-neutral and neutralground), main voltage (only for DC power supply), phase current, neutral current calculated and real power (active, reactive and apparent phase and total) P.F. (Power factor of each phase and total), Cosphi of each phase and total frequency (frequency measurement of the voltage measured), asymmetry of voltage and current, total harmonic distortion (THD) of voltages and currents, analysis of voltage and current up to the 63rd harmonic function max. (HIGH) and the min. (LOW) for the acquisition and storage of the instantaneous values of voltage, current, power, PF, Con. and frequency averaging function peak values (maximum demand) power and current flow

direction of the power harmonics energy meters for active, reactive, apparent (partial and total functions with programmable tariff) counter (total and partial programmable) texts in 5 languages (Italian, English, French, Spanish and Portuguese).

Accuracy for IEC / EN 50470-3 (MID Class B).

The main measures at 28Vcc are:

- output voltage
- output current

Signaling:

- mains presence
- converter running
- alarm.



SWITCHES AND OPERATOR CONTROLS

The bipower FC400 + SE 28 GPU are equipped with the following protections and controls:

- Input switch isolator with door lock
- 400Hz Output switch isolator
- 28Vdc output switch isolator
- START / STOP converter buttons

As an option

- 400Hz and 28Vdc output contactors
- 400Hz and 28VDC output ON / OFF buttons
- Local or Remote control selector 400Hz and 28Vdc
- ON / EF BYPASS interlock selector 400Hz and 28Vdc
- Voltage drop compensation max 8% 400Hz
- Voltage drop compensation max 8% 28Vcc
- LCD touchscreen display
- Remote control ON / OFF output 400Hz
- Remote control ON / OFF output 28Vcc
- SNMP interface, RS485, RS232, USB

STANDARDS

CE Compliant.

MIL STD 704F: Aircraft Electric Power Characteristics

ISO 6858: Ground support electrical supplies

EN 2282: Characteristics of aircraft electrical supplies – General requirements

EN 61000-6-2: Electromagnetic compatibility. Emission

EN 61000-6-4: Electromagnetic compatibility. Immunity.

EN 13849-1: Safety of machinery - Safety-related parts of control systems.

DFS400 Specification for 400 Hz aircraft power

BS 2G 219: General requirements for ground support equipment

SAE ARP 5015: Ground equipment 400 Hz ground power performance requirement

CUSTOM VERSIONS

Custom configurations and features are provided on request:

- Version with anti-vibration and / or customized dimensions,
- Mobile version on trolley,
- 400Hz and 28Vdc customizable power
- Under-bridge configuration,
- PCB tropicalization treatment,



GROUND BIPOWER UNIT FC400 + SE 28

INPUT	
Nominal voltage	400V 3Ph (208V, 440V 480V and 575V on request)
Voltage tolerance	+10% -15%
Power factor	0.95 at full load (0.98 on request)
Nominal frequency	50Hz/60Hz $\pm 5\%$
Current distortion THDI	<25% standard (<10% o <3% opzionale)
Inrush current	Absent

400Hz OUTPUT	FC400 30	FC400 45	FC400 60	FC400 90
Rated power	30kVA/27kW	45kVA/40.5kW	60kVA/54kW	90kVA/81kW
Voltage	200V 3Ph+N (115V, 440V, 480V and 575V on request)			
Frequency	400Hz $\pm 0.01\%$			
Power factor	Inductive – capacitive			
Waveform	Sinusoidal			
THD	<3% with linear load (2% on request)			
Static stability	$\pm 1\%$			
Dynamic stability	$\pm 8\%$			
Recovery time	10 msec.			
Overload	1.25 In for 10 minutes – 1.5 In for 1 minute – 2 In for 30 seconds As option: 3 In for 10 seconds – 4 In for 1 second			
Crest factor	1.414 $\pm 3\%$			
Voltage modulation	<1%			
Voltage phase shift	$\pm 1^\circ$ el. with balance load $\pm 2^\circ$ el. with 30% unbalance load			

28Vdc OUTPUT	SE 28 400	SE 28 600
Voltage	28.5Vdc	
Output current	400 A	600 A
Static stability	$\pm 1\%$	
Dynamic stability	$\pm 8\%$	
Recovery time	10 msec.	
Overload	500A 10 mins. – 600A 1 min. 800A 30 secs. – 1200A 10 secs. 1600A 2 secs.	750A 10 mins. – 900A 1 min. 1200A 30 secs. – 1800A 10 secs. 2400A 2 secs.
Ripple	<1%	

MISCELLANEOUS	
Dimensions	600x950x1600mm or 850x800x2000mm
Operating temperature	from -10°C to +45°C (-20°C/+55°C -40°C/+60°C on request)
Relative humidity	from 0 to 95% without condensing
Altitude	1000m above sea level without derating
Protection degree	IP 20 (IP31, IP41, IP44, IP54, IP60 on request)
Cooling	Forced air

ELIT Srl reserves his right to do modifications to his products without notice