

NGPS

New Generation Power Supplies



EPICS IOC
Embedded



Featuring
Linux® OS
Embedded


The NGPS series is a new series of power supplies with high stability and low noise for the most demanding accelerator applications – e.g. dipoles, quadrupoles, sextupoles.

Current and Voltage digital control loop: easy to be configured on different loads.

Stand-alone unit with local control and internal self-cooling by air convection. Available also with liquid cooling option.

Best-in-Class precision and Temperature Coefficient combined with fast dynamic response.


Features

- 19" - 3U size for unit up to 350 A
- 6U size for greater output current
- Selection of different current and voltage ratings up to 1200 A or 100 V (12 kW max.)
- 10/100/1000 Ethernet interface
- 2x Fast SFP interface (10 kHz update) for PARALLEL operation when modular current upgrade is required
- Current or Voltage regulation
- Low noise and low ripple
-  transducers for precise current sensing and regulation
- Thermal stabilized acquisition electronics for high temperature and long-term stability
- Configurable digital control loop
- Internal protections and auxiliary readbacks
- Local color graphical display and control
- Embedded ISO/IEC 23360 OS and EPICS IOC
- Dedicated software application
"VISUAL" free software application
- Liquid cooling options for easy thermal management in constrained spaces and for higher current models

Applications

- Magnet Power Supply
- Laboratory Equipment
- Fast Current or Voltage control

The NGPS – New Generation Power Supply – series is a set of power converters that combines know-how and technology to a power supply with outstanding performances and functionalities.

High-efficiency, low-noise and extreme temperature and long-term stability, obtained by the use of a DCCT with  technology, allow the NGPS units to be the perfect fit for high demanding applications – e.g. particle physics and medical accelerator magnets.

The control loops of output current and voltage are performed through an ARM multi core SOC combined with FPGA and DSP technology that enables to obtain the desired dynamic response with any type of different load connected to the power unit.

An internal (ISO/IEC 23360 compliant) Operative System (featuring Linux OS) and EPICS IOC make the integration of this power supply straightforward in any control system and installation.

Communication can be performed via a standard TCP-IP Gigabit Ethernet connection and simultaneously via two fast SFP links (optical or electrical) that enable for the update rate of the output current to reach and unprecedented 10 kHz value for a 10 kW power supply unit. The SFP links allow also easy paralleling of units to obtain modular current upgrade

Dipole, quadrupole and sextupole magnets are typical applications of these power supply units that guarantee the high performances in terms of stability and noise as well of remote controlling and control system integration.

Internal protections against over-voltage (i.e. magnet stored energy), excessive current ripple, regulation fault, external interlocks, over-temperature and ground current are implemented into the system with the same configurability level and easiness of use that all of OCEM and CAENels power supplies have always presented.



About OCem

OCem is a leading company in power electronics for scientific and industrial research, with a flexible customer-oriented approach and main commitment in Plasma physics, Particle accelerators, Superconductivity, Radio Frequency Systems, Transportation, Food processing and Medical Particle Therapy.

- Magnet Power Supplies
- High-Voltage Power Supplies
- RF Systems
- Turn-key Systems

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About CAEN ELS

CAEN ELS is a leading company in the design of power supplies and state-of-the-art complete electronic systems for the Physics research world, having its main focus on dedicated solutions for the particle accelerator community.

- Power Supply Systems
- Precision Current Measurements
- Beamline Electronic Instrumentation
- FMC & MTCA.4 – MicroTCA for Physics

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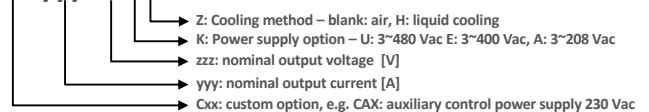
A dedicated PC software application is supplied with the units to easily configure and control the NGPS.

Models rated at 6 kW, 10 kW and 12 kW with currents up to 1200 A are available.

Ratings and requirements can be also matched upon customer's specifications and requests, including additional options such as quench detectors, energy absorber add-on, etc.....

Technical Specifications		NGPS Series	
Input Ratings	480 VAC ±10% ('U') Three-phase 50/60 Hz 400 VAC ±10% ('E') Three-phase 50/60 Hz 208 VAC ±10% ('A') Three-phase 50/60 Hz		
Regulation Type	Current-control (C.C.) or Voltage-control (C.V.)		
Available models: current ranges	100 A, 140 A, 160 A, 200 A, 300 A, 400 A, 600 A, 1100 A, 1200 A		
Available models: output voltages	5 V, 10 V, 15 V, 25 V, 30 V, 50 V, 60 V, 100 V		
Maximum output power	up to 12 kW single case		
Output Isolation v.r.t. input + PE	500 V		
Power Factor	> 0.94		
Efficiency	> 90 %		
Current and Voltage Setting	18 bit		
Current and Voltage Readback	20 bit		
Max Current/Voltage update rate	10 kHz (over SFP)		
Closed-loop Bandwidth	C.C. mode	> 100 Hz	
	C.V. mode	> 200 Hz	
Accuracy	C.C. mode	< 100 ppm	
	C.V. mode	< 0.05 %	
Output voltage ripple	0.04% @ 300 Hz; 0.012% @ 40/80 kHz		
Remote Sensing Compensation	up to 2 V		
Cooling	Air cooling: Forced Air Convection (front-to-rear) Liquid cooling: 1,5 l/min; max pressure 8 bar; max pressure drop 1,5 bar		
Temperature Stability	C.C. mode	5 ppm/K	
	C.V. mode	50 ppm/K	
Interfaces	10/100/1000 TCP-IP Ethernet Two (2) SFP <i>Other interfaces available upon request</i>		
Internal Interlocks/Protections	Over-Temperature MOV Input Over-Voltage Main circuit-breaker for overload and short circuit protection Free-wheeling diodes Output Over-current and Over-Voltage Earth current leakage Input Phase-Loss (DC-link undervoltage)		
External Interlocks/States	User-configurable "dry" contacts Relay (magnetic contacts, NO and NC)		
Other Features	Firmware remote update Interlock configurability Adaptable thresholds for trips and interlocks		
Modularity	Parallel connection	up to 4 units	
	Series connection	up to 2 units	
Mechanical Dimensions	19" x 3 U x 600 mm including connectors		
Weight	≈ 28 kg - 3U models ≈ 50 kg - 6U models		
Operating Temperature	0 ... 40 °C		
EU directive conformity and Standard compliance	LVD: 2014/35/UE EMC - EMC: 2014/30/UE - PED: 2014/68/UE (liquid cooled) EN 61010-1:2010 - EN 61326-1:2013		

Ordering Options – NGPS-Cxx yyy-zzzKZ



Standard off-the-shelf models:
NGPS 140-50E, NGPS 200-50E, NGPS 400-30E, NGPS 400-30EH, NGPS 160-60EH, NGPS 200-25EH, NGPS 160-30EH, NGPS 200-40E, NGPS 200-30E, NGPS 200-60E, NGPS-CAX 100-100E, NGPS-CAX 200-40E, NGPS-CAX 200-50E, NGPS 300-25E, NGPS 300-30E, NGPS 600-5EH, NGPS 600-10EH, NGPS 600-15EH, NGPS 1100-5EH, NGPS 1200-10EH