

Programmable DC Power Supply

CINERGIA's Programmable DC Power Supplies are power electronics equipment designed to generate a DC constant voltage, current or power. Thanks to its bidirectional hardware the DCPS can source or sink the test energy while the grid-tied converter will actively regenerate the energy back to the electrical grid consuming a sinusoidal current with unity power factor and low harmonic distortion.

FUNCTIONAL DESCRIPTION

Operation modes:

- Constant Voltage (CV)
- Constant Current (CC)
- Constant Power (CP)
- Automatic test from Excel file

It provides three DC channels:

- The three channels can be controlled independently, allowing different voltage, current or power setpoints
- The three channels can be controlled in parallel, sharing the same setpoint and providing 3 times the current
- In Unipolar 2Q applications, the loads will be connected between one channels and the common negative.
- In Bipolar 4Q applications, the loads will be connected between two channels

KEY FEATURES

6.75 – 160 kW

2/4 Quadrant Power Supply

Regenerative up to 100% rated power

1 channel Output:
0 to 750V, 0 to $\pm 690A$

3 channels Output:
0 to 750V, 0 to $\pm 230A/ch$

Bipolar Output
-750 to +750V, 0 to $\pm 230A$

CV, CC, CP modes



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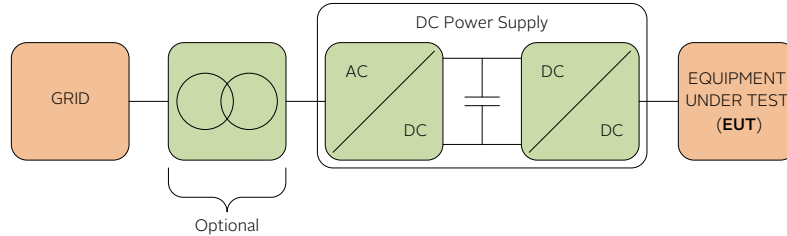


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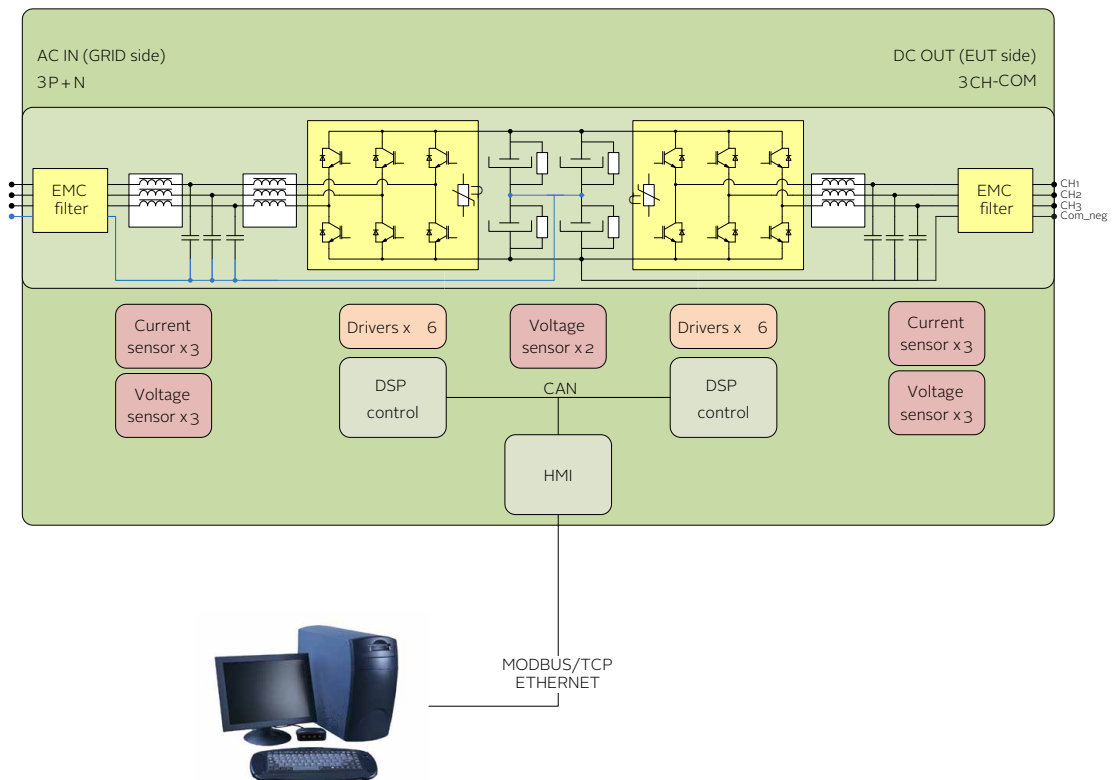
CONCEPTUAL SCHEMATIC



BACK-TO-BACK TOPOLOGY

The converter is formed by a grid-side Active Rectifier and an output DCDC converter sharing a DC-link. The Active Rectifier allows sinusoidal current consumption with low harmonic distortion and unity power factor. The DCDC converter generates three independent DC voltages controlling the voltage, current or power.

TECHNICAL DIAGRAM



AC Input is connected to the grid (neutral connection is required). Galvanic isolation is recommended.

AC Output is connected to the Equipment Under Test (EUT) and can be used as:

- Three independent 2Q channels
- One 2Q channel (3 times rated current)
- One 4Q bipolar channel (connecting the load between two channels)

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USER INTERFACE

Local 3.2" Touchscreen panel

Local control port:

- 1 analog input 0-10V
- 3 analog outputs 0-10V
- 4 digital inputs
- 3 relay outputs
- 1 Emergency stop

Note: all inputs/outputs are isolated

Communications port:

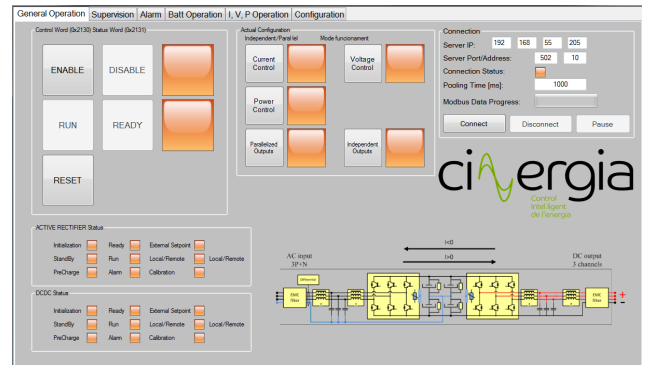
LAN Ethernet with Modbus/TCP protocol.

Optional communications:

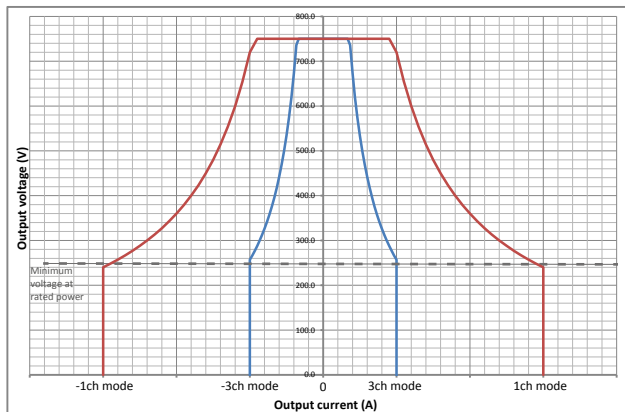
RS485, RS232, CAN, LabView

SOFTWARE FEATURES

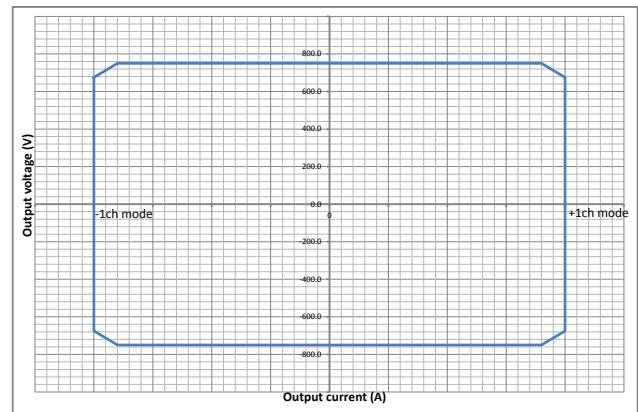
Windows 7 user interface for remote operation and data acquisition.



OPERATION AREA: 1/3 CHANNELS



OPERATION AREA: BIPOLAR



Cooling

The power supply is air-cooled internally.

Mechanical housing

The power supplies are housed in compact cabinets with wheels up to 120kVA for easier transportation.

Options

- Galvanic Isolation
- Isolation monitor
- Isolated analog inputs
- RS485, RS232, CAN
- Labview drivers

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RANGE AND SPECIFICATIONS

MAGNITUDE		VALUE	
Power		7.5kVA-200kVA	
Input side (GRID side)			
AC Voltage	Rated	3x400Vrms+Neutral+Earth	
Voltage range		+15% / -20 %	
AC Current	(at rated power)	10-290Arms	
Frequency		48-62Hz	
THDi	(at rated power)	<3%	
Power Factor	Typical at rated power Configurable by user	≥0.99 0-1 (capacitive/inductive)	
Efficiency	(at rated power)	>92%	
Overload		125% for 10 min / 150% for 60 s	
Output side (EUT side)			
DC Voltage	Channel-Com_neg Channel-Channel	0-750V -750 to 750V	
Minimum voltage	at rated power [†]	220V	
DC Current	1 channel output 3 channels output Bipolar output	0 to ±690A 0 to ±230A/ch 0 to ±230A	
Modes of operation	Range	Resolution	Ripple
Constant Voltage	0-100% [‡]	<±0.1%	<1%
Constant Current	0-±100%	<±0.1%	<1%
Constant Power	0-±100%	<±0.1%	<1%
Response time	Rated resistance load	1-5ms (10-90%)	
General			
Measurements	Input Voltage (Vrms) and Current (Irms) Input and Output Power Output Voltage and Current Temperatures		
User interface	3,2" Touchscreen Local Control port: 1 analog input, 3 analog outputs, 4 inputs, 3 relays Communication Port: Ethernet (Optionals: RS485, RS232, CAN) Communication Protocol: Modbus/TCP		
Humidity	10-90% (Absolute maximum, without condensation)		
Temperature	5-35 °C (Absolute maximum)		
Cooling	Forced air		
Protections	Over Current, Over Voltage, Shortcircuit, Overtemperature		
Standards			
CE Marking			
Safety	EN-62040-1-2, EN-60950-1		
EMC	EMC: EN-62040-2		

[†] Below minimum voltage the power is derated due to the current limitation. See operation area for further detail

[‡] 0-±100% in bipolar mode (galvanic isolation requested)

All specifications are subject to change without notice.

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MODELS

REFERENCE	RATED		RATED CURRENT			WEIGHT kg	DIMENSIONS DxWxH (mm)
	kVA	kW	3channels 0-750V	1channel 0-750V	Bipolar -750 to 750V		
DCPS7.5	7.5	6.75	±10A	±30A	±10A	100	770x450x1100
DCPS10	10	9	±15A	±45A	±15A	100	
DCPS15	15	13.5	±20A	±60A	±20A	102	
DCPS20	20	18	±25A	±75A	±25A	105	
DCPS30	30	27	±40A	±120A	±40A	150	
DCPS40	40	36	±50A	±150A	±50A	175	
DCPS50	50	45	±65A	±195A	±65A	185	
DCPS60	60	54	±80A	±240A	±80A	185	880x590x1320
DCPS80	80	72	±105A	±315A	±105A	265	
DCPS100	100	90	±130A	±390A	±130A	290	850x900x2000
DCPS120	120	108	±130A	±390A	±130A	290	
DCPS160	160	128	±155A	±465A	±155A	540	850x900x2000
DCPS200	200	160	±185A	±555A	±185A	550	

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GALVANIC ISOLATION (optional)

REFERENCE	RECOMMENDED CIRCUIT BREAKER	WEIGHT kg	DIMENSIONS DxWxH (mm)
IT7.5	Type D - 25A	67	Inside the cabinet
IT10	Type D - 32A	94	
IT15	Type D - 50A	125	
IT20	Type D - 63A	145	595x415x708 (*)
IT30	Type D - 80A	174	
IT40	Type D - 100A	217	789x490x865 (*)
IT50	Type D - 125A	280	964x684x1252 (*)
IT60	Type D - 160A	381	
IT80	Type D - 200A	435	1192x744x1430 (*)
IT100	Type D - 250A	458	
IT120	Type D - 315A	514	1192x744x1430 (*)
IT160	Type D - 400A	612	
IT200	Type D - 500A	753	1192x744x1430 (*)

(*) The transformer is delivered in a stand-alone cabinet IP23
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