



3 Branch fuel cell emulator 330 kW

- Rated power 55 kW, 110 kW, 330 kW, 500 kW.
- Operation mode as photovoltaic panel, fuel cell or both.
- Supply voltage 400 V 3 ~ 50/60 Hz
- Emulation of 1, 2 or 3 branches.
- Voltages 24V, 125 V, 360V, 600 V (consult other versions)
- Current per branch of 100 A, 200 A, 300 A, 500 A.
- Configurable curve selection: BoL, EoL, other.
- Parameterization of Open Circuit Voltage and Short Circuit Current.
- Interface with customer's SCADA, control by MODBUS, ETHERNET, etc.
- User software with all processes controlled from a PLC
- Local and remote Control.

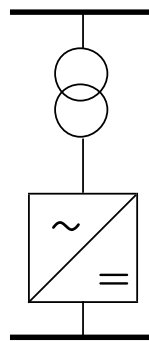
General description

Photovoltaic Panel Emulators and Fuel Cell Emulators developed by SUPSONIK, S.L. allow full testing of equipment designed to work with this type of power source, such as photovoltaic inverters on the one hand, and electronic systems of electric vehicles powered by fuel cell, on the other.

These emulators allow the building of test benches that replace actual installations (such as solar farms or physical fuel cells) that depend on variable atmospheric conditions or complex chemical systems, and allow testing under repeatable and controlled conditions.

They allow to simulate variable process conditions (changes in solar irradiance, aging of generating installations, different types of panel and battery curves, etc.), all in a simple and practical way.

Panel and fuel cell Emulators are constituted by an AC / DC converter that provides a DC voltage that depends on the current demanded by the consumer, so that it always follows the characteristic curve V-I of the element being simulated.



The selected curve can be varied during emulator operation to simulate changes in test conditions.

Likewise, the control system allows selecting the typical curve of panels and cells indicating only two parameters: open circuit voltage and maximum or short circuit current.

It is also possible to introduce the curves as V-I values - taken for example from a real test of a system - or given by the curves provided by manufacturers.

An additional advantage of using an Emulator system is the energy saving. In case the equipment to be tested is connected to the distribution network - as it is the case of photovoltaic inverters, the power taken from the network by the panel emulator is returned to the network by the photovoltaic inverter. Due to this recovery of energy, it is possible to test high power photovoltaic inverters with a reduced input power, typically between 10 and 15% of the total power, reducing energy costs up to 85-90%.

110 kW PHOTOVOLTAIC PANEL EMULATOR

TECHNICAL FEATURES

AC / DC converter PHOTOVOLTAIC PANEL EMULATOR

Rated power	110 kWp
Rated AC input voltage	400 V 3~ 50/60 Hz \pm 10%
Rated/maximum output power	100 kW / 110 kW
Rated / maximum output DC power	210 A / 250 A
Minimum / nominal / maximum output DC Voltage	450 V / 525 V / 800 V
Maximum voltage variation by branch	\pm 1%
Maximum voltage ripple by branch	2%
Open Circuit Voltage	Programmable. Max 800V
Short Circuit Intensity	Programmable. Max 250A
Galvanic isolation	Optional with line transformer
Regenerative capacity	No. Unidirectional converter
ENVIRONMENTAL CHARACTERISTICS	
Protection degree	IP20 (optional IP54)
Working / Storage temperature	-15°C to 50°C / -25°C to 65°C
Relative humidity	15% to 95% with no condensation
Altitude	1000 m.
DIMENSIONS AND WEIGHT	
Dimensions (Width x Depth x Height)	1000 x 800 x 1800 (mm)
Weight	600 Kg
Colour	RAL 7035
Refrigeration	AF

110 kW FUEL CELL EMULATOR

TECHNICAL FEATURES

AC / DC Converter FUEL CELL EMULATOR

Rated power	310 kW
Rated AC input voltage	400 V 3~ 50 Hz \pm 10%
Number of Output Fuel cell Branches	1
Output power per rated / maximum branch	100 kW / 110 kW
Output DC current per rated / maximum branch	265 A / 300 A
Minimum / nominal / maximum output DC Voltage	260 V / 380 V / 525 V
Maximum voltage variation by branch	\pm 1%
Maximum voltage ripple by branch	5% for $f > 30$ Hz, 0.1% for $f < 30$ Hz
Fuel Cell characteristic curves	BoL / EoL / programmable
Galvanic isolation	Yes. Line transformer
Regenerative capacity	No. Unidirectional converter
ENVIRONMENTAL CHARACTERISTICS	
Protection degree	IP20 (optional IP54)
Working / Storage temperature	-15°C to 50°C / -25°C to 65°C
Relative humidity	15% to 95% with no condensation
Altitude	1000 m.
DIMENSIONS AND WEIGHT	
Dimensions (Width x Depth x Height)	1000 x 800 x 1800 (mm)
Weight	850 Kg
Colour	RAL 7035
Refrigeration	AF

USER INTERFACE

- Graphic touch screen with performance curves
- Communications via wired signals, MODBUS, PROFIBUS, TCP / IP via RS485 and Ethernet.
- Local / Remote Control.
- Integration with Customer's test bench