

# 50 kVA Power Class Conversion Combo System



A liquid cooling AC/DC/AC power converter system delivering AC output from an ICE driven PM generator or the grid source, supported by a bidirectional DC energy buffer.

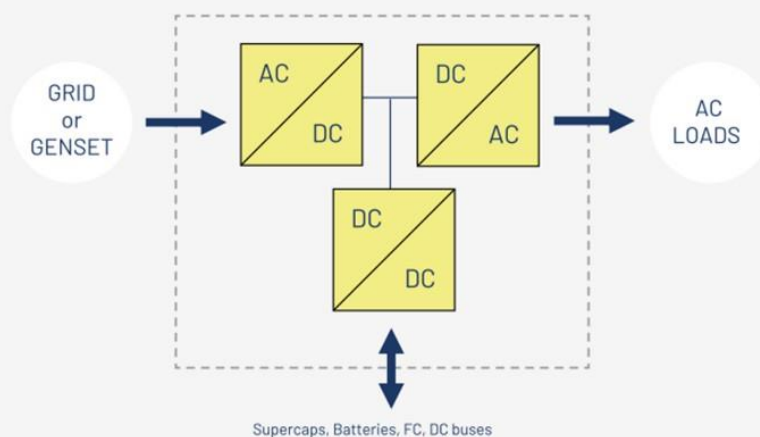
## Key Features & Benefits

- Network stabilizer (Frequency and Voltage)
- Independent Energy Source
- Continuity against voltage drops (blackout)
- Elimination of disturbances even of very short duration
- Unlimited continuity of energy with parallelism with a motor generator
- Power scalable, parallelable

## Applications

- Battery driven Gensets
- Energy Storage Devices
- Fuel Cells driven Gensets
- Smart grids
- Hybrid/electric vehicles

## Block Scheme



<b>GENERALS</b>	
Device type	AC/DC/AC Power Converter
Power class	50 KW
Power stages technology	IGBT
Control stages technology	DSP/FPGA – Digital Vector Control
Efficiency	> 96% @ nominal values
<b>AC INPUT</b>	
Device type	AC to DC converter
Target Generator / Grid	3ph. Sinusoidal PM brushless / 50 ÷ 60 Hz grid
Rotor position sensor	No (sensorless control)
Grid input filter	Not included
MAX input current	80 A <sub>rms</sub>
Input voltage (MIN/NOM/MAX)	320/400/480 V <sub>AC</sub>
<b>AC OUTPUT</b>	
Device type	DC to AC converter as a 3ph. load supply
Features	3ph. + N output, 100% unbalance capability (4 legs, 4 wires)
Nominal Power	50 kVA @ cos $\phi$ up to 1 (50 kW)
Nominal voltage (rms)	400 V <sub>AC</sub> , 3ph, 50 Hz / 480 V <sub>AC</sub> , 3ph, 60 Hz
Nominal current	72 A <sub>rms</sub> (@ 400V <sub>AC</sub> , 50 Hz)
MAX AC current	150 A <sub>rms</sub> , 6s (@ 400V <sub>AC</sub> , 50 Hz)
<b>DC IN/OUT</b>	
Device type	Bidirectional, not galvanically insulated DC/DC Converter
DC Buffer Target	Supercapacitors, Batteries, Fuel Cells (sink only), DC Grid ,
Nominal Power	50kW
Voltage range	60 ÷ 600 V <sub>DC</sub>
MAX DC current	200 A
Battery management	BMS connection via CANBUS
<b>AUXILIARY POWER SUPPLY</b>	
Input voltage	12V <sub>DC</sub> (6V <sub>DC</sub> 5 sec. max)
MAX input current	10 A (only when the DCBUS is not charged; otherwise, 0 A)
<b>MECHANICALS AND CONNECTIONS</b>	
Case	Painted metal
Electrical connections	Industrial grade connectors (wiring connectors not included)
Dimensions	700 x 600 x 200 mm (Connectors and brackets excluded)
Weight	100 kg.
<b>ENVIRONMENT</b>	
Cooling	Liquid cold plate, max inlet: 50°C, nominal flow 10 l/min.
Protection grade (EN60529)	IP55
Air temperature around the box	Operating -10°C ÷ +55°C
	Storage -40°C ÷ +70°C
<b>MORE FEATURES</b>	
Communication	CANBUS;
Basic Protection/Alarms	Over current, Over voltage, Over temperature
Limits/Parameters setting	via CAN BUS
AC Output quality	ISO 8528, G3 class
Earth configuration	Can be integrated in TT, TN and IT nets. Loop impedance in TT systems < 4 Ohm
Duty without energy buffer	Possible, derated
AC out parallel connection	Possible both with VSGs and traditional Gensets
THD	< 3 %
<b>SCOPE OF SUPPLY NOTES</b>	
Energy Storage Buffer	Batteries / Supercaps Not included
ICE control unit	Not included
HMI	Not included
EMI filter	Not Included
AC distribution wiring / panel	Not included
Breakers	Not included
<b>STANDARD</b>	
Safety	EN 62477-1:2012 + A11 + A12 (Safety requirements for power electronic converter systems and equipment )
Burst	EN IEC 61000-6-2:2019 (EMC - Immunity standard for industrial environments)
Surge	EN IEC 61000-6-2:2019 (EMC - Immunity standard for industrial environments)
RF Immunity	EN IEC 61000-6-2:2019 (EMC - Immunity standard for industrial environments)
Voltage dips	EN IEC 61000-6-2:2019 (EMC - Immunity standard for industrial environments)
ESD	EN IEC 61000-6-2:2019 (EMC - Immunity standard for industrial environments)
Harmonic Emissions	EN 61000-3-12:2011 (EMC - Limits for harmonic currents produced by equipment connected to public low-voltage systems)
Conducted Emissions	EN IEC 61000-6-4:2019 (EMC - Emission standard for industrial environments)
Radiated Emissions	EN IEC 61000-6-4:2019 (EMC - Emission standard for industrial environments)
<b>OPTIONS</b>	
Custom Communication	CANBUS protocol as per customer's specifications