EEI HYDRO
INVERTER 8YE SERIES

EEI has developed solutions for the parallel connection of 60kW up to multi MW hydro turbine with Synchronous Permanent Magnet Generator. This configuration allows to eliminate the gearbox as well as to supply energy even when the frequency is variable. The control logic has been developed to manage in an active way the anomalous operation conditions (e.g. grid failure, strong water flow rate etc.), independently from the safety system adopted.
EEI manufactures its converter for hydro application in close cooperation with the generator manufacturer in order to optimize the performance, increasing efficiency and profitability system. The modular architecture alows to connect in parallel several units on the same secondary transformer in order to manage different size of plant.

INVERTER

Inverter enclosure made of 20/10mm steel panels. Front opening through lockable doors to ease access to all parts. Side and rear access through bolted panels.
Inverter drive specifications:

- IGBT power circuit, film capacitors and low inductance connections
- Digital management of control parameters, alarm diagnostics, analogue and digital I/O signals from dedicated microcontroller and DSP software
- 400V-690V three-phase AC output

SAFETY AND RELIABILITY

Inverters are manufactured following systematic and rigorous production and testing processes. All products developed by EEI are ISO 9001 certified.

MAIN COMPONENTS INCLUDED INSIDE ENCLOSURE

- Automatic circuit breaker or disconnector with fuses
- EMI Filter
- Mains contactor
- LCL Filter
- Three-phase IGBT AFE/Inverter
- Dv/Dt filter generator side
- Contactor generator side
- D.c.-link precharge generator side

OPTIONAL COMPONENTS

- Grid feed monitoring according to CEI 0-21
- D.c. current control system
- D.c.-link static precharge for motor mode
- Dynamic brake unit with resistor bank
- LCD touch panel for remote control
- Generator grounding disconnector

AUXILIARY AND CONTROL CIRCUITS:

- Power supply for 24Vdc auxiliary services
- Power supply for 400Vac 3Ph+N auxiliary services
- Circuit breakers for internal fan protections
- Circuit breakers for auxiliary circuits
- Terminal block for power cables and signal cables

EEI
ITALIAN
POWER
TECHNOLOGY

MAIN CHARACTERISTICS OF EEI CONVERTER:

- Efficiency: IGBT Active Front End
- Reliability: only thin film DC link capacitors and modular design for easier maintenance operations
- Safety: self-protection functions
- Quality Energy: low THD(I), adjustable power factor
- Flexibility: state-of-the-art solution, developed and designed according to customer needs

INTERFACE AND COMMUNICATION

The 8YE series converters could be equipped with a data-logger unit and a touch-screen display that provides storage of past log files and alarm list.
Communication protocol available: RS-485, CAN Open, MODBUS TCP/IP, ProfiNet ect.
Additional parts provided:

- Manually operated switches
- Signal lights for voltage presence
- Emergency push-button

MODEL	8YE220	8YE400	8YE675	8YE850
GENERATOR SIDE PARAMETERS				
Rated power	200 kW	360 kW	590 kW	785 kW
Rated current @40°C	290A	510A	740A	800A
Rated voltage	530V	530V	530V	690V
Overload	110% for 1' every 10'	110% for 1' every 10'	110% for 1' every 10'	110% for 1' every 10'
GRID SIDE PARAMETERS				
Rated power	220 kVA	400 kVA	675 kVA	850 kVA
Rated current @40°C	260A	462A	780A	710A
Rated voltage	500V ± 15%	500V ± 15%	500V ± 15%	690V ± 15%
Rated frequency	50Hz±4%	50Hz±4%	50Hz±4%	50Hz±4%
Type grid	IT/ TN	IT/ TN	IT/ TN	IT/ TN
THD(I)	< 3%	< 3%	< 3%	< 3%
Power Factor	Adjustable according to CEI 0-16			
GENERAL DATA				
Efficiency	> 96%	> 96%	> 96%	> 96%
Operating temperature	-5°C / +40°C	-5°C / +40°C	-5°C / +40°C	-5°C / +40°C
Storage Temperature	-15°C / +55°C	-15°C / +55°C	-15°C / +55°C	-15°C / +55°C
Max humidity (non-condensing)/ Max altitude	95 %@20°C/ <1000m asl	95 %@20°C/ <1000m asl	95 %@20°C/ <1000m asl	95 %@20°C/ <1000m asl
Colour	RAL 7035 (light grey)			
Dimensions (W / H / D)	1360 / 2220 / 750 mm	1360 / 2220 / 750 mm	1760 / 2220 / 750 mm	1960 / 2220 / 750 mm
Cooling Type	Forced Air	Forced Air or Water	Forced Air or Water	Forced Air or Water
External auxiliary supply	24Vdc / 400Vac 3PH+N			
Communication protocol	MODBUS TCP/IP, RS-485, CAN Open, PROFINET Other protocols upon request			
PROTECTIONS				
Self-protections	Included Overcurrent, short circuit, current leakage, voltage out of range, thermal protection over temperature. Other functions upon request			
EMC and safety standards	EN 60204-1, EN 61800-2, EN 6180-3, EN 61800-5-1			

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