INVERTERS

The inverters of the ELIT INV 220 series, with IGBTs modulated in PWM, supply an isolation transformer providing a sinusoidal and stabilized output voltage.
All the equipment is distinguished by the use of technologically advanced components, for excellent reliability, and simple maintenance.

These devices are designed for use:
- - Automation
- - Industrial and petrochemical plants
- - Telecommunications
- - Railway sector
- - Civil and military aeronautics
- - Civil and military naval

PRINCIPLES OF WORKING

The Inverter ELIT INV 220 transforms the DC voltage into a stabilized sinusoidal alternating voltage. The modulation technique used is of the PWM type.
The switching frequency is optimized to achieve reduced output harmonic content, rapid response to load changes and low switching losses.
In the emergency line version, on request, it is possible to supply the inverter with priority the AC power line and intervention of the DC power supply in case of mains failure.

FEATURES

The main components that composed the inverter ELIT INV 220 are:
- Input filter
- IGBT conversion unit (Inverter)
- Output filter
- Output insulation transformer
- Static switch as option
- Manual by-pass as option
- Insulation transformer for emergency line as option
- Parallel kit feature as option

<u>INVERTER ELIT INV 220 COMPOSITION</u>
a) IGBT Greatz bridge type with PWM regulation
b) Output current limitation
c) Output voltage detector min – max
d) Heat sink temperature detector
e) DC link voltage detector min - max
Short circuit running

<u>STATIC BYPASS SWITCH (AS OPTION)</u>
It transfers the load from the inverter to the emergency line in the event of an inverter overload or failure.
The bypass is available in three configurations with different transfer times:
- Contactor solution, with a transfer time of about 100msec.
- Static contactor solution, with a transfer time of about 50msec.
- Static switch solution, with tranfer time zero.

In this last configuration, the transfer takes place automatically and without interruption.

Characteristics

a) Min – max mains voltage monitor
b) Quartz mains frequency monitor
c) Mains – inverter transfer manual or automatic and vice versa
d) Transfer inhibition mains – inverter after 5-6 attempts
e) Heat sink temperature detector

If the limits are exceeded, the load is transferred to the emergency line and the inverter is switched off. When the normal conditions are restored, the Inverter will be re-inserted.

TOUCH-SCREEN DISPLAY AND CONTROL (optional)

LCD display with backlight. The display is divided into four menus accessible with the corresponding function keys: The main measures are:
voltage (phase voltage, phase-to-neutral and neutral-ground)
main voltage (only for DC power supply)
phase current
neutral current calculated and real power (active, reactive and apparent phase and total)
P.F. (Power factor of each phase and total)
Cosphì of each phase and total
frequency (frequency measurement of the voltage measured)
asymmetry of voltage and current
total harmonic distortion (THD) of voltages and currents
analysis of voltage and current up to the 63rd harmonic
function max. (HIGH) and the min. (LOW) for the acquisition and storage of the instantaneous values of voltage, current, power, PF, Con. and frequency
averaging function
peak values (maximum demand) power and current
flow direction of the power harmonics
texts in 5 languages (Italian, English, French, Spanish and Portuguese).
accuracy for IEC / EN 50470-3 (MID Class B).

INTERFACES

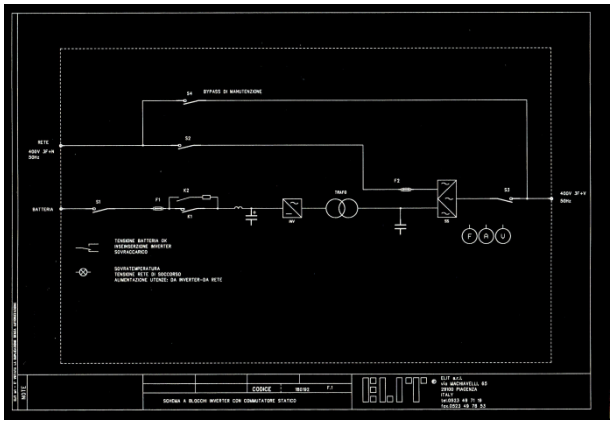
The apparatus is provided with a dry contact to remote the following signaling:
- inverter alarm
- inverter running
- ON/OFF remote control as option

Additional interface modules for measurements transmission as option:
- RS485 interface
- RS232interface
- Profibus-DP interface
- Ethernet interface
- Output pulses
- Analogical output
- Alarms

CUSTOM VERSION

We realize custom apparatus according to customer's technical data employing the standard series sets and therefore with experimented feature.
Fix or variable input voltage
Fix or variable output voltage
Cabinet protection degree for outdoor use
Extended working temperature from -40°C to 50°C
Parallel configuration kit
Parallel cabinet with system switches
Voltage accuracy calibration with potentiometer
Frequency accuracy calibration with potentiometer
Distribution cabinet
Drop line compensator
Mobile version
Under bridge configuration

BLOCK DIAGRAM



Model	INV 220 5	INV 220 10	INV 220 15	INV 220 20
Rated power	5kVA/4.5kW	10kVA/9kW	15kVA/13.5kW	20kVA/18kW

INPUT	
Nominal voltage	220Vdc
Voltage tolerance	180 ÷ 300Vdc
Emergency line as option	400V 3Ph or 230V 1Ph, 50/60Hz (120, 208, 230, 440, 480 and 575V as option)

OUTPUT	
Voltage	400V 3Ph+N or 230V 1Ph (120, 208, 230, 440, 480 and 575V as option)
Frequency	50 or 60Hz ± 0.1%
Static stability	± 1%
Dynamic stability	± 8%
Crest factor	1.414 ±3%
Working	Continuously
Waveform	Sinusoidal
Overload	125% for 10 minutes, 150% for 1 minute
Transfer time	20 msec.
THD distortion	< 3%
Efficiency	> 90%

MISCELLANEOUS				
Operating temperature	-15 ÷ +45°C (different values on request)			
Relative humidity	from 0 to 95% without condensing			
Altitude	1000m seal level without derating			
Protection degree	IP 20 (IP 54 as option)			
Cooling	Forced air (natural as option)			
Dimensions (mm)	850x800x1100		600x950x1200	
Weight (kgs)	150	180	220	250

STANDARDS	
Safety	IEC/EN 62040-1-1, IEC/EN 60950-1
EMC	IEC/EN 62040-2, IEC/EN61000-3-2, IEC/EN61000-6-2
Performance	EN 62040-3

Model	INV 220 25	INV 220 30	INV 220 40	INV 220 50
Rated power	25kVA/22.5kW	30kVA/27kW	40kVA/36kW	50kVA/45kW

INPUT	
Nominal voltage	220Vdc
Voltage tolerance	180 ÷ 300Vdc
Emergency line as option	400V 3Ph or 230V 1Ph, 50/60Hz (120, 208, 230, 440, 480 and 575V as option)

OUTPUT	
Voltage	400V 3Ph+N or 230V 1Ph (120, 208, 230, 440, 480 and 575V as option)
Frequency	50 or 60Hz ± 0.1%
Static stability	± 1%
Dynamic stability	± 8%
Crest factor	1.414 ±3%
Working	Continuously
Waveform	Sinusoidal
Overload	125% for 10 minutes, 150% for 1 minute
Transfer time	20 msec.
THD distortion	< 3%
Efficiency	> 90%

MISCELLANEOUS				
Operating temperature	-15 ÷ +45°C (different values on request)			
Relative humidity	from 0 to 95% without condensing			
Altitude	1000m seal level without derating			
Protection degree	IP 20 (IP 54 as option)			
Cooling	Forced air (natural as option)			
Dimensions (mm)	600x950x1200		850x800x1600	
Weight (kgs)	270	300	350	400

STANDARDS	
Safety	IEC/EN 62040-1-1, IEC/EN 60950-1
EMC	IEC/EN 62040-2, IEC/EN61000-3-2, IEC/EN61000-6-2
Performance	EN 62040-3

Model	INV 220 60	INV 220 80	INV 220 100	INV 220 120
Rated power	60kVA/54kW	80kVA/72kW	100kVA/90kW	120kVA/108kW

INPUT	
Nominal voltage	220Vdc
Voltage tolerance	180 ÷ 300Vdc
Emergency line as option	400V 3Ph or 230V 1Ph, 50/60Hz (120, 208, 230, 440, 480 and 575V as option)

OUTPUT	
Voltage	400V 3Ph+N or 230V 1Ph (120, 208, 230, 440, 480 and 575V as option)
Frequency	50 or 60Hz ± 0.1%
Static stability	± 1%
Dynamic stability	± 8%
Crest factor	1.414 ±3%
Working	Continuously
Waveform	Sinusoidal
Overload	125% for 10 minutes, 150% for 1 minute
Transfer time	20 msec.
THD distortion	< 3%
Efficiency	> 90%

MISCELLANEOUS				
Operating temperature	-15 ÷ +45°C (different values on request)			
Relative humidity	from 0 to 95% without condensing			
Altitude	1000m seal level without derating			
Protection degree	IP 20 (IP 54 as option)			
Cooling	Forced air (natural as option)			
Dimensions (mm)	800x850x1600	800x1000x1900		
Weight (kgs)	500	650	750	800

STANDARDS	
Safety	IEC/EN 62040-1-1, IEC/EN 60950-1
EMC	IEC/EN 62040-2, IEC/EN61000-3-2, IEC/EN61000-6-2
Performance	EN 62040-3

220VDC SINUSOIDAL INVERTER

Rev. 1 Serie INV 220

Model	INV 220 160	INV 220 200	INV 220 250	INV 220 300
Rated power	160kVA/144kW	200kVA/180kW	250kVA/225kW	300kVA/270kW
INPUT				
Nominal voltage	220Vdc			
Voltage tolerance	180 ÷ 300Vdc			
Emergency line as option	400V 3Ph or 230V 1Ph, 50/60Hz (120, 208, 230, 440, 480 and 575V as option)			
OUTPUT				
Voltage	400V 3Ph+N or 230V 1Ph (120, 208, 230, 440, 480 and 575V as option)			
Frequency	50 or 60Hz ± 0.1%			
Static stability	± 1%			
Dynamic stability	± 8%			
Crest factor	1.414 ±3%			
Working	Continuously			
Waveform	Sinusoidal			
Overload	125% for 10 minutes, 150% for 1 minute			
Transfer time	20 msec.			
THD distortion	< 3%			
Efficiency	> 90%			
MISCELLANEOUS				
Operating temperature	-15 ÷ +45°C (different values on request)			
Relative humidity	from 0 to 95% without condensing			
Altitude	1000m seal level without derating			
Protection degree	IP 20 (IP 54 as option)			
Cooling	Forced air (natural as option)			
Dimensions (mm)	1300x1000x1900			
Weight (kgs)	950	1200	1550	1700
STANDARDS				
Safety	IEC/EN 62040-1-1, IEC/EN 60950-1			
EMC	IEC/EN 62040-2, IEC/EN61000-3-2, IEC/EN61000-6-2			
Performance	EN 62040-3			