
Static frequency converters, ELIT FC series, are outcome of a long experience both in UPS and in frequency converters field. The frequency converter FC60 is particularly suitable where the highest product reliability and availability is demanded.
All of our equipments distinguish themselves by the employment of advanced technological components, excellent reliability and easy maintenance.
The simplicity of working is the main feature of all of our products.

## PRINCIPLES OF WORKING

The frequency converter, making it particularly suitable for the power of all equipment requiring different power supply frequency. Normally this device can in fact receive 50Hz frequency input and supply 60Hz in output, and vice versa. For his high lean to be customized, the frequency converter FC60 is usually employed in several applications as industrial and testing process, naval, and petrochemical plant.

A diode rectifier transforms the AC voltage into a continuous stabilized DC link voltage, to power the IGBT inverter that transforms the continuous voltage into an alternating sinusoidal stabilized voltage with a PWM modulation. The output inverter voltage feeds a transformer which on its output have the filter capacitors.
The output voltage is sinusoidal with a distortion of 3%. The output has an electronic stabilization both in voltage and in frequency.

## FEATURES

- High efficiency > 93%;
- Filtered, stabilized and regulated sine wave supply;
- Input power factor > 0.95;
- Wide input voltage window and input frequency window;
- Superior overload capability;
- Insulation transformer;
- LCD display;
- Emergency Power Off.

## OPTIONS

- Multi input and output voltages even independents and insulated among them;
- Multi input and output frequency;
- Drop line compensation for each output;
- Voltage fine regulation with front panel potentiometer;
- Frequency fine regulation with front panel potentiometer;
- Parallel version;
- Remote control terminal board;
- single phase input with three phase output;
- Single phase output;
- Output contactor;
- Battery version (UPS);
- Protection degree up to IP 54;
- Horizontal or mobile version;
- RS232, USB, RS485 & SNMP interfaces.

## CONTROL PANEL

The control panel is divided in three parts:
- LCD display (PMD)
- LED indicators
- Keyboard.

### LCD display

The LCD display meter provide to give the following output data:
- Voltage;
- Current;
- Frequency;

On request and conforming to technical data of the apparatus the LCD can have the following characteristics:
LCD backlit. Display is subdivided into four menus which are accessible by pressing the relevant function keys:
- Voltage: phase voltage, active Energy, linked voltage, reactive voltage phase voltage min. value and max value, harmonic distortion phase voltage;
- Current: phase current, active energy, phase current demand, reactive energy, phase current max demand, neutral current, harmonic distortion phase current
- Power: Active, reactive, apparent power, phase active power, reactive energy, phase reactive power, phase apparent power, active, reactive apparent power demand and max demand;
- Power factor;
- Frequency ;
- Working hours and minutes;
- Positive and negative active Energy;
- Positive and negative reactive Energy;

### LED signaling

- Mains;
- frequency converter running;
- frequency converter alarm.

### Keyboard

Possibility to select the desired menu, to load a customized display page and modify the programmable parameters.

## INTERFACES

The apparatus are provided with a dry contact to remote the following signaling:
- frequency converter alarm;
- frequency converter running;
- ON/OFF remote control

Optional modules:
- RS485 communication;
- RS232 communication;
- Profibus communication;
- Lonworks communication;
- Pulse output;
- Analog output;
- Alarms;
- Neutral current.

## MONITORING CONTROL SYSTEM (as option)

ELIT FC60 manages communication from and to remote devices, distributed in two ways:

- Physical connections;
- Wireless connections.

These two kinds of connections can be combined at any way, to use in the better way the available infrastructures for the application (telephone cable, ADSL/HDSL connections, optic fiber cable, GSM/GPRS modem, UMTS modem, HSPDA modem).

The System can use two dedicated lines by cable, optic fiber or it can use a point of access through LAN network or internet in remote plant allowing the management with automatic calling or through request of the control device.

The Workstation logs on Central System through LAN or Internet network allowing the complete compatibility of the System.

ELIT FC60 has a Client platform, designed for mobile phones, with Java ELITMobile platform. It allows to access directly with the phone to all data of the Server and to perform all maintenance actions in remote.

The Central System controls every access with login procedure, classifying them in different levels according the operative level that you desire to give at each user.

## CUSTOM VERSION

We realize custom apparatus according to customer’s technical data employing the standard series sets and therefore with experimented feature.

| Model | FC60 5 | FC60 7.5 | FC60 10 | FC60 15 | FC60 20 | FC60 25 | FC60 30 | FC60 45 |
|---|---|---|---|---|---|---|---|---|
| Rated power kVA/kW | 5/4 | 7.5/6 | 10/8 | 15/12 | 20/16 | 25/20 | 30/24 | 45/36 |
| **INPUT** | | | | | | | | |
| Nominal voltage | 400V 3Ph (208, 230, 440, 480 and 575V as option) | | | | | | | |
| Voltage tolerance | ± 15% | | | | | | | |
| Power factor | > 0.95 at nominal load | | | | | | | |
| Nominal frequency | 50Hz , 60Hz ±5% | | | | | | | |
| Current distortion | <30% (<10% as option) | | | | | | | |
| Inrush current | Absent | | | | | | | |
| **OUTPUT** | | | | | | | | |
| Voltage | 400V 3Ph+N (208, 230, 440, 480 and 575V as option) | | | | | | | |
| Frequency | 60Hz ± 0.1% | | | | | | | |
| Power factor | 0.7 lagging to 0.95 leading | | | | | | | |
| Waveform | Sinusoidal | | | | | | | |
| Total harmonic distortion | <3% with linear load | | | | | | | |
| Static stability | ±1% | | | | | | | |
| Dynamic stability | ±8% | | | | | | | |
| Recovery time | 2 msec. | | | | | | | |
| Overload | 125% for 10 minutes, 150% for 1 minute | | | | | | | |
| Voltage symmetry | ±1% with balanced load, ±2% with 30% unbalanced load | | | | | | | |
| Crest factor | 1.414 ±3% | | | | | | | |
| **MISCELLANEOUS** | | | | | | | | |
| Dimensions WxDxH | 600x800x1200mm | | | | | | | |
| Weight | 5kVA 100kgs | 7.5kVA 110kgs | 10kVA 120kgs | 15kVA 180kgs | 20kVA 250kgs | 25kVA 270kgs | 30kVA 300kgs | 45kVA 450kgs |
| Overall efficiency | > 93% | | | | | | | |
| Noise level | < 65dBA | | | | | | | |
| Operating temperature | -25 ÷ +50°C | | | | | | | |
| Relative humidity | 0 from 95% without condensing | | | | | | | |
| Altitude | 1000m without derating | | | | | | | |
| Protection degree | IP20 (IP31, IP41 and IP54 on request) | | | | | | | |
| Cooling | Forced air | | | | | | | |
| **STANDARDS** | | | | | | | | |
| Performance | ISO 6858, MIL-STD-704, EN 2282 | | | | | | | |
| EMC | EN 61000-6-4, EN62040-2, EN 61000-6-2, EN 61000-4-3/4/5 | | | | | | | |
| Safety | EN 62040-1-1, EN 61558-2-6 | | | | | | | |
| **USER INTERFACE** | | | | | | | | |
| Input | Circuit breaker | | | | | | | |
| Output | Switch (contactor on request) | | | | | | | |
| Selector | ON/OFF | | | | | | | |
| Output meter | Voltage, current, frequency Optionally: minimum and max voltage, current demand, max current | | | | | | | |

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|---|---|
| | demand, average current, current harmonic distortion, three phase power, phase power, power factor, run hour, active and reactive energy. |
| Signaling | Mains, converter running, converter alarm (output converter connected on request) |
| Potentiometers | Voltage fine regulation and frequency fine regulation on request |
| Remote control | ON/OFF converter |

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|---|---|
| **AVAILABLE OPTIONS** | Multi input and output voltages;<br>Multi input and output frequency;<br>Drop line compensation for each output;<br>Parallel version;<br>Remote control terminal board;<br>single phase input with three phase output;<br>Single phase output;<br>Output contactor;<br>Battery version (UPS);<br>Horizontal or mobile version;<br>RS232, USB, RS485 & SNMP interface |

ELIT Srl reserves his right to do modifications to his products without notice.