

Three-phase frequency and voltage converters for manual and automatic test benches and measurement labs



FVC 30kVA

- 1 and 3 Phase Output
 - Output Power: 5kVA - 1.000kVA
 - Output Voltage: up to 1000V L-L
 - Output Frequency: 40Hz - 200Hz
- Other Versions:*
- 15Hz - 80Hz
 - 200Hz - 350Hz
 - 350Hz - 450Hz
- Overload Capability up to 200%
 - Low output distortion
 - Custom specific designs
 - RS232/RS485 interface standard, USB/LAN/Fiber Optic optional
 - Windows® Software FVC-Manager

Main Applications:

- 50/60/400Hz conversions
- Transformer tests
- tests of motors and pumps

Description and Application

Frequency converters of the **FVC Series** are very robust, cost affordable and easy to use equipments developed especially for intensive use in production and testing lines, as well as in research and development labs.

The converters provide a symmetrical, balanced and regulated three-phase sinusoidal voltage with the possibility to vary voltage and frequency. Models ranging from **5kVA up to 1000kVA** allow to test low, medium and high power equipments that can not be supplied by conventional grids and create patterns of voltage suitable for testing the limits of operation. They can also be simply used as voltage regulators. All devices are suitable for medium and high power applications offering an excellent price/performance ratio. Typical applications are 50/60/400Hz conversions, transformer tests, motor or pump testing etc.

The output waveform is sinusoidal with low harmonic distortion of less than 0.5% even in the presence of asymmetrical loads.

FVC frequency converters can work with resistive, inductive and capacitive loads.

The presence of electromechanically selectable output ranges allows to adapt the equipment to different requirements, allowing to use all the power at various full ranges without having to penalize heavily the power output.

The output voltage is continuously adjustable from 0 to full scale, feedback is done on each single phase and external sensing is standard on every equipment. The output voltage accuracy is 2% and the recovery time for a 50% load change is about 2ms.

The output frequency in the standard models ranges from **40Hz to 200Hz**, continuously adjustable in increments of 0.1 Hz. Models with a frequency range **up to 450Hz** (suitable for avionic applications) or **down to 15Hz** (typically for railway applications) are available as well.

FVC converters are three-phase systems. Single phase operation with reduced power is possible by connecting the DUT between one output phase and neutral, or between two phases. Single phase units are available with an output power from 3 to 30kVA. The overload capability of the **FVC Series** up to 200% of the nominal current is especially suited for the test of loads with high inrush current like for example motors or pumps.

Automatic and remote operation is ensured via the standard analog and RS232/RS485 interfaces or optional USB, LAN and Fiber Optic interfaces.

Specifications

Output Specifications	
Output voltage	up to 900V L-L or 1000V L-L
Minimal regulated voltage	0V
Waveform	Sinusoidal
Voltage accuracy	typ. 2% of FS
Output voltage ranges	1 (std) or 2 (optional)
Output frequency	Std: 40-200Hz, BF: 15-80Hz, MF: 200-350Hz, HF: 350-450Hz
Frequency resolution	0.01Hz
Frequency accuracy	0.15%
Line regulation	typ. 1% FS
Load regulation	typ. 1% FS
Linearity	typ. 0.5% FS
DC offset	0, output is transformer-coupled
Max HF residual ripple/distortion	typ. 0.5% of FS
Output connection	internal terminals or output cable with CEE-connector
Max output power continuous	1000kVA
Max output power overload	120%, 150%, 200% for 1 min
Number of phases	std. 3, 1-phase models up to 30kVA
Output current continuous	depending on power
Max output current overload	depending on power
Peak output current	depending on power
Maximum time of overload at I _{peak}	1 Minute
Minimum setting voltage	0V
Settling time for 50% load change	2ms
THD at 50-60Hz	0.5%
Output THD @ 400Hz	typ. 3-4%
Senses	internal & external
Permissible power factor	from 0.2 to 1
Protection and safety	Over-current, short-circuit, overtemperature

Interfaces	
Controls on the front	Line MCB, Push-button run-stop, Voltage adjustment 10 turn potentiometer, Frequency adjustment 10 turn potentiometer, Emergency push-button
Voltage adjustment	manual or 0-10V / serial (RS232/RS485)
Frequency adjustment	manual or 0-10V / serial (RS232/RS485)
Run - Stop	24Vdc / serial
External emergency	L.V. N.C. voltage free circuit guard
Communication interface	RS232/RS485 std.; USB, LAN, Fiber Optic opt.
Analog inputs	0-10V for voltage and frequency
Input Specifications	
Line voltage	3 phase / 400V 3F
Line frequency	45-65Hz
Connection to the line	internal terminals or power supply cable with CEE-connector
Max compensation voltage	10% f.s.
Max cable length	100m
Line protection	Automatic MCB
Other	
Operating temperature	5-40°C
Storage temperature	-5-60°C
Dimensions	electrical cabinets
Weight	depending on power
Safety and EMC	CE (EMC & LVDT)
Protection rating	std. IP20B; other IP on request
Cooling	Forced Air
Measurements	Output voltage R, S, T; Output current R, S, T; Output frequency
Displays	3.5 digit digital voltage display 3.5 digit digital current & frequency display
Acoustic noise at 1m	typ. 65dBA
Line / output - gnd isolation	2500Vrms
Output / gnd isolation	1500Vrms
Max operation voltage each output to gnd	depending on output voltage
Permissible operating altitude	max. 1000m
Paint finish	RAL7035

Available Standard Models

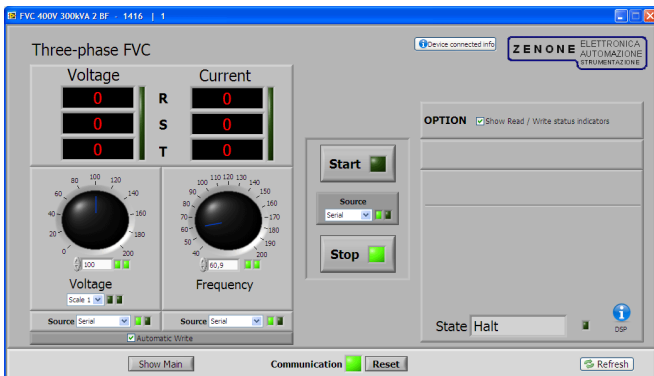
Type	Power	3 Phase	1 Phase
FVC 500-5K	5kVA	x	x
FVC 500-7K5	7.5kVA	x	x
FVC 500-10K	10kVA	x	x
FVC 500-15K	15kVA	x	x
FVC 500-20K	20kVA	x	x
FVC 500-30K	30kVA	x	x
FVC 500-40K	40kVA	x	
FVC 500-60K	60kVA	x	
FVC 500-80K	80kVA	x	
FVC 500-100K	100kVA	x	
FVC 500-150K	150kVA	x	
FVC 500-250K	250kVA	x	

More models available with up to 1000kVA.
Specific versions on request.

Every standard model available with:

- Output Voltage: up to 1000V L-L
- Overload: 120, 150 or 200%
- Frequency:
 - Standard: 40-200Hz
 - BF: 15-80Hz
 - MF: 200-350Hz
 - HF: 350-450Hz

FVC-Software

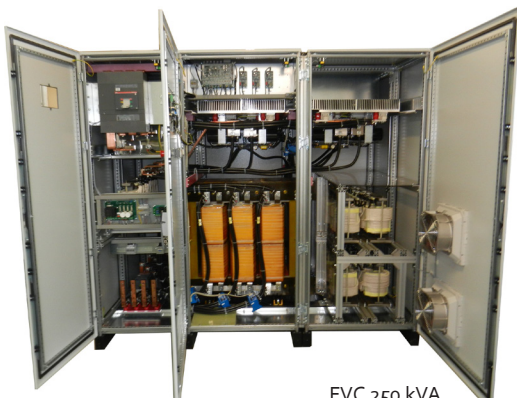


The optional FVC-Software allows to remote the FVC Series through various available interfaces.

Options

Name	Description
/M-FVC-SW	Management Software
/PID	PID software
/Wheels	Cabinet with wheels, max weight 800kg
/USB	USB interface
/LAN	LAN interface
/FO	Fiber Optic interface
/Vxxxx	Special output Voltage range (P.E. V900 = 900V f.s.)
/IP	Special IP protection
/LabVIEW®	LabVIEW® Drivers

Product Pictures

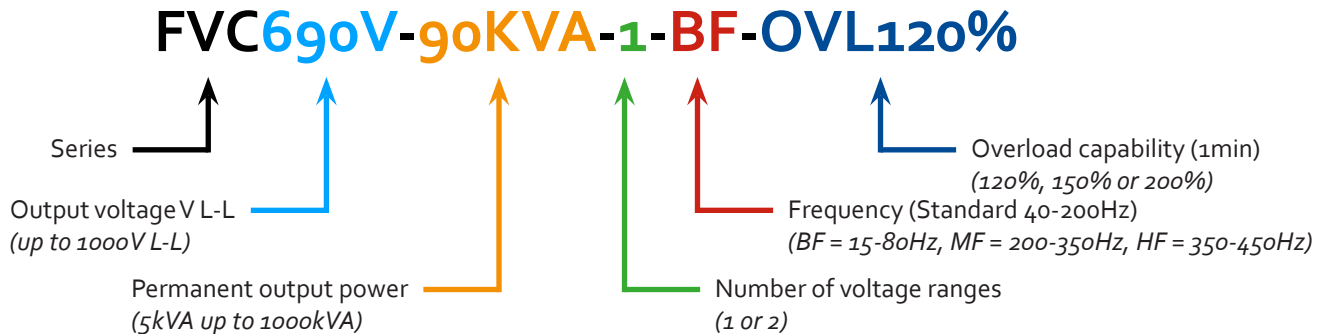


FVC 250 kVA

Standard Delivered Items

- FVC converter
- English manuals
- Compliance and calibration certificate
- CE conformity document

Model / Order Example



Other Products

Current Generators, 1Φ and 3Φ

- GI Series: AC current generators up to 50kA / 1000kVA / 40-200Hz
- GIS Series: AC and DC current generators up to 5kA / 80kVA / DC...10-800Hz
- Typical Applications:
 - Thermal and magnetical tests of switches, breakers, relays, fuses with trip-time measurements
 - Heating tests of electrical contacts
 - Tests of coils and transformers
 - Tests and calibration of measurement instruments



GI AC-Current Generator



GIS AC&DC-Current Generator



DC-Source AL3000

DC Power Sources for medium and high power applications: AL3000 Series

- Output voltage: 5VDC to 1200VDC
- Output power: 2kW to 1000kW
- Output current: 10A to 10000A
- Operation in CV/CC/CP mode
- Fully bidirectional versions AL3000R Series

About Zenone Elettronica

Founded in 1990 in Mirabella, Italy, by engineers with many years of experience in the power electronic industry, Zenone Elettronica has quickly become a leader in the design and manufacturing of complex power electronic systems with a high level of technology.

With the focus in converting static energy of medium and high power, the current product program includes:

- Static AC and DC current generators up to 50 kA
- Single and three-phase frequency converters up to 1 MVA
- Single and three phase programmable AC sources up to 1MVA
- High Power DC Power Supplies up to 1200V and 1MW
- High Power Bidirectional DC Power Supplies
- AC loads up to 500kVA

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