

SINE33i SFC



The SINE33i series of Static Frequency Converters consists of a wide range of single and three phase input systems with a three phase output. Custom built systems to meet specific requirements are our speciality, the SINE33i's modular microprocessor based design makes it incredibly flexible and thus easy to meet almost any build requirement.

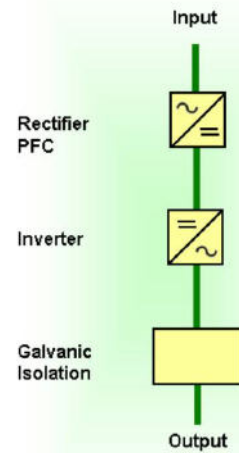
Static Frequency Converters

SINE33i SFC

System Operation

- The Power Factor Corrected rectifier converts the single or three phase mains supply into DC, the PWM inverter then switches the DC back to AC at the desired frequency and voltage, the output transformer provides Galvanic Isolation which isolates the input and output from each other.

System Operation



Specifications

Enclosure

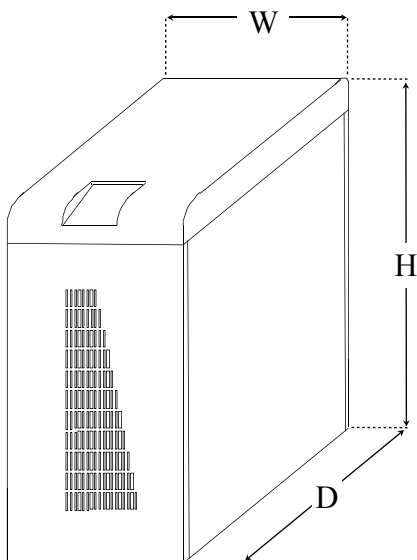
- High quality steel enclosures finished in RAL7032 powder coating
- Cable entry is at the rear for the C enclosure and at the bottom on the D & E enclosures, all systems have removable gland/back plates to allow for simple installation
- IP rating for standard enclosures is IP20 (higher IP ratings available)
- Castors are provided on systems supplied in C enclosures to allow good manoeuvrability during installation. A Plinth on systems supplied in D & E enclosures allows good manoeuvrability with forklift or pallet truck during installation, cabinets are sized to fit through standard doors
- D & E Enclosures have key locked front doors

Dimensions

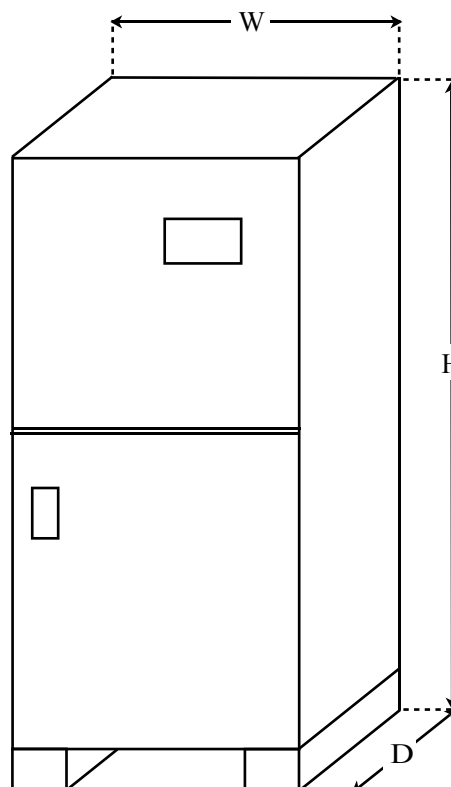
Type	H	W	D
C(IP20)	1000	530	750
D(IP20)	1400	720	800
E(IP20)	1400	1440	800

Sizes subject to change without notice

C Enclosure



D & E Enclosures



Rectifier

- Power Factor Corrected, rectifier, this means that the current drawn from the mains is in phase with the voltage (0.99pF @ full load). In simple terms it means that you pay less money on your electric bill to achieve the same result as a non-power factor corrected rectifier, it also means less distortion of your mains supply.
- Single and three phase input available (single phase up to 40KVA)
- Protection against DC over-voltage, input mains low and mains surges e.g. Surges caused by lightning.
- Battery charging facility for systems with optional battery backup

Inverter

- High Frequency pulse width modulation (PWM) IGBT inverter
- High quality sinewave output
- Galvanic isolation with grounded neutral
- High efficiency
- Reliable, proven design

Remote Monitoring circuits

- Volt free contacts (option)

Hot Standby Operation

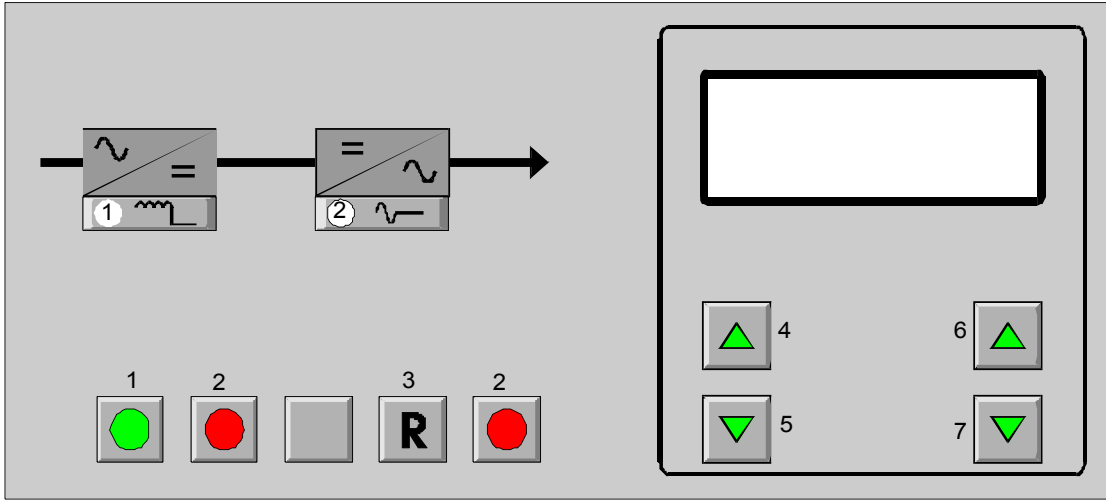
- This configuration is used with critical loads - the system consists of two units in a master / slave configuration, the slaves output is fed through the masters static switch and then to the load, if the slave unit fails then the master unit supplies power to the load. This configuration can be used on 50, 60 or 400Hz systems.

Parallel Operation

- Redundant:: This configuration is similar to Hot Standby and is used with critical loads - the system consists of two or three units connected in parallel, the load is divided by the number of units, the total load should never exceed the full load rating of one unit, if one or more units fails then the remaining unit/s will supply the load.
- Non-Redundant: This configuration is used to increase the capacity of one unit, so by adding additional units the power is multiplied by the number of units connected in parallel.

Display

- Consists of 4 x 20 character LCD Dot-matrix with two indicating lights (LED's), eight scrolling / command buttons and audible alarm which sounds whenever there is a problem.



LCD Digital Meter readings (top two lines)

- **Inverter:** Volts AC / % Load / Frequency
- **Rectifier:** Volts AC / % Load / Frequency
- **DC:** Volts DC
- **Environment:** Ambient Temperature
- **General:** Run time

LCD Scrolling Alarms / Status Text (lower two lines)

- Rectifier input Mains Fail
- Phase Rotation incorrect
- DC Over-voltage
- Overload
- Short-circuit
- Over-temperature
- Inverter Under-voltage
- Inverter fault
- DC Under-voltage

System and Installation considerations

- **Room ventilation:** Adequate ventilation should be provided to disperse any heat dissipated by the unit. The system will generate a small amount of heat during standby operation but as load is added a greater amount of heat will be generated, as guide, 100W of heat will be generated for every 1000W of load
- **Environment:** All systems use forced cooling to extract heat from the enclosure, therefore it is important that the room is kept dry and free from dirt and dust.
- **Correct rating of system:** All loads should be checked for actual power consumption and then summed to determine the actual load on the system. Spare capacity should be allowed for future growth. Some loads demand a high inrush current; air-conditioning systems, compressors and motors are some of the most common, x10 inrush currents are common with these types of loads so it is very important that these are allowed for when sizing the system

SINE33i SFC

Optional Factory Fitted Features

Internally fitted options

- **Built in distribution:** Single, double, three or four pole output circuit breakers can be fitted internally to eliminate the need for an external distribution board.
- **RS232 Port:** For remote monitoring Software via RS232
- **SNMP Adapter:** For remote monitoring of system via LAN
- **High IP rating:** Maximum IP55
- **Battery backup (SFC + UPS):** Valve Regulated Lead Acid (VRLA), 10 Year life at 20 Degrees C and complies with BS EN60896-2

Remote Mounted Options

- **RAP:** Remote alarm panel which can be connected up to 100 meters away by 4 core cable for remote monitoring of system. Consists of LED display with audible alarm and silence button.

Systems Ratings

System Type	KW/KVA Rating	Current /Phase @ 400VAC	Current /Phase @ 200VAC	Enclosure
1 Hour Systems				
SINE33i 10K	10.0	14.5	29.0	C
SINE33i 15K	15.0	21.7	43.4	C
SINE33i 20K	20.0	29.0	58.0	C
SINE33i 30K	30.0	43.5	87.0	C
SINE33i 40K	40.0	58.0	116.0	D
SINE33i 50K	50.0	72.5	145.0	D
SINE33i 60K	60.0	87.0	174.0	E
SINE33i 80K	80.0	116.0	232.0	E
SINE33i 100K	100.0	145.0	290.0	E

Note: Sizes subject to change without notice

Technical Data

Enclosure

- Type: Floor standing on castors/ plinth.
- Degree of protection: IP20 (IP55 available)
- Finish: Textured, epoxy/polyester powder paint, colour RAL 7032
- Cable entry: Rear/Bottom
- Terminals: DIN Rail mounted, screw clamp type

Rectifier - Power Factor Corrected

- Mains Supply Voltage: 230/400VAC +/-10% Single or Three Phase (other voltages available on request)
- Mains Supply Frequency: 50 or 60Hz +/-5% (other frequencies available on request - 16-440Hz)
- Power Factor: 0.99pF @ full load
- Input Protection: MCB to BS EN 60898
- Protections: DC over-voltage protection, mains low protection and input surge protection
- Technology: Full wave controlled thyristor / diode bridge with IGBT power factor correction

Inverter

- Voltage: 200/208 or 380/400/415VAC Three Phase, other voltages available on request
- Voltage Regulation: Static +/-1%, Dynamic +/-6%
- Voltage Waveform: Sinusoidal
- Frequency: 50, 60 or 400Hz +/-0.1% (other frequencies available on request - 16-850Hz)
- Distortion (THD): <3% into linear load
- Load Power Factor: 0.3 lag to 0.3 lead
- Crest Factor: 3:1
- Overload (KVA): 120% continuous 121% for 2 minutes, 160% for 5 seconds without reduction in output voltage
- Efficiency: 90-93% depending on system
- Protections: Electronic overload / short circuit, over-temperature, inverter over/under-voltage and low DC shutdown
- Technology: High frequency, pulse width modulated IGBT with isolation transformer

General

- Noise Level: <55dBA @ 1 metre
- Maximum Relative Air Humidity: 90%, non-condensing
- Maximum Altitude: 1000m Above sea level before de-rating
- Max/Min Temperature: 0-40 Degree C

Standards

- BS EN 50091-1 (Safety)
- BS EN 50091-2 (EMC)
- BS EN 61000-3-4 (Harmonics)