Three-phase Industrial Inverter
OND4 SERIES

The new OND4 SERIES inverter provides safe, pure sine wave, single-phase or three-phase reliable power to critical control equipment.

These inverters are of the "online" type. The load is fed by the inverter and uses a static switch to transfer to AC emergency supply in the unlikely event of an inverter failure. It can then power critical loads without interruption in case of a loss of electric supply.

These true online inverters integrate pulse width modulation (PWM) control combined with high frequency IGBT power transistors.

The system includes:
- an inverter (DC/AC converter);
- a static switch;
- a maintenance bypass switch (to isolate the system).

Typical customers includes utilities and heavy industry.

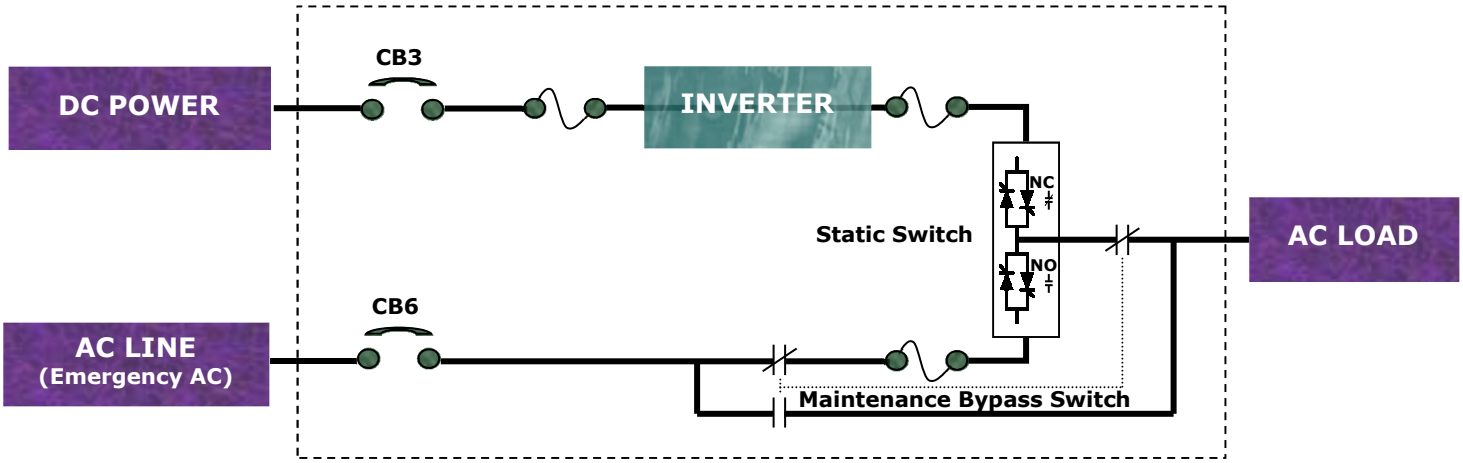
- **Designed specially to fulfil the needs of the industries and power company substations**
- **Ideal for powering lighting and process control systems**
- **Mature and proven technology**
- **Easy to maintain**
- **Customer support from a comprehensive team of engineers and technicians**
- **Life span of more than 25 years**
- **Compatible with non-linear loads**
- **Pure sinusoidal waveform**
- **Single- or three-phase output**
- **Isolated input/output**
- **125Vdc or 250Vdc input**
- **Output voltage up to 600Vac**
- **Static switch for transfer without interruption**
- **Redundant system available**
- **Embedded WEB server**
- **DNP3 communication protocol**
- **Secured access**

Control Unit

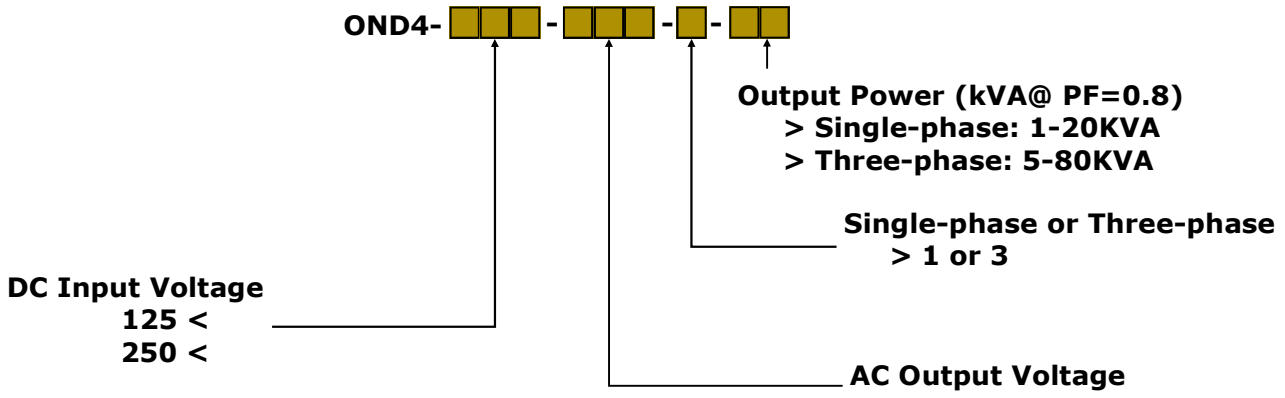
A microprocessor control unit ensures the PWM waveform generation, the synchronization and steady-state voltage regulation even when the inverter supplies non-linear loads. In addition, it provides measurements (voltmeters, ammeters, frequency meter) and monitoring of the inverter with a comprehensive alarm system.

Control Unit

Block diagram



Modèle



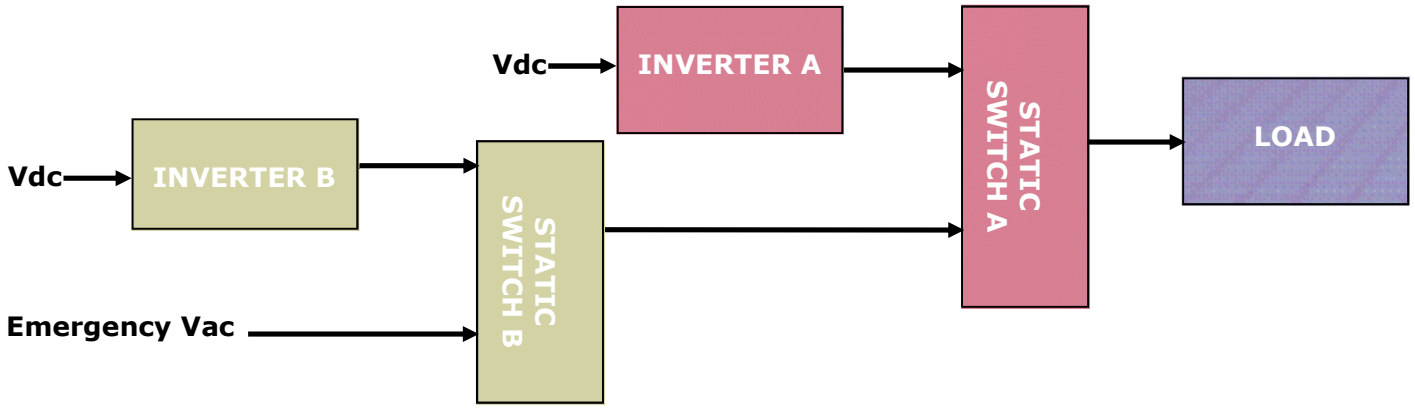
Configuration

The inverters are available according to the following configurations:

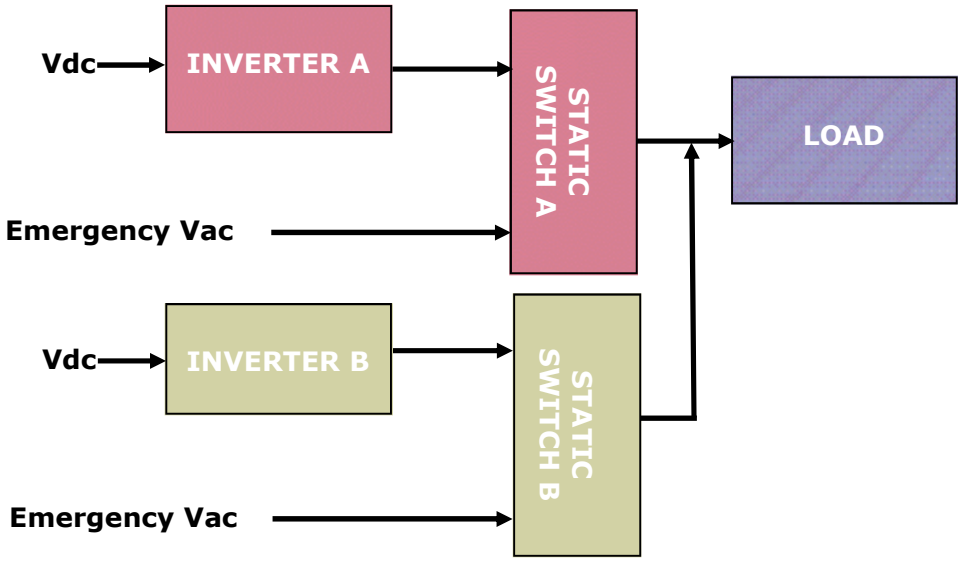
Standard System: Each system is made up of a single inverter system.

Master-Slave Redundant System:
Each system is made up of two (2) redundant inverter systems operating as follows: One (inverter A) is the master and feeds the load. If it fails, the static switch (A) transfers the load to the second unit (inverter B) that then supplies the load. Afterwards, if inverter B fails, the static switch (B) will transfer the load to the emergency AC supply.

Parallel Redundant System:
Each system is made up of two (2) redundant inverter systems operating as follows: Normally, inverters (A) and (B) feed the load that is equally split between both inverters. In the case one inverter fails, the other takes up the load totally. If both inverters fail, the static switches transfer the load to the emergency AC power.



Redundant Configuration (master-slave)



Redundant Configuration (parallel)

DATA COMMUNICATION

Recover data, built system performance history

The system supports communication through DNP3 Protocol (level 2). You may establish a connection through any of the two (2) Ethernet ports (both optical and copper) available on the system. With this connection, it is possible to transmit all measurements, alarms and indicators to a processing or control center. You may also remotely control the system through this connection. By saving the data history transmitted, the processing center will be able to analyze the system long-term performance.

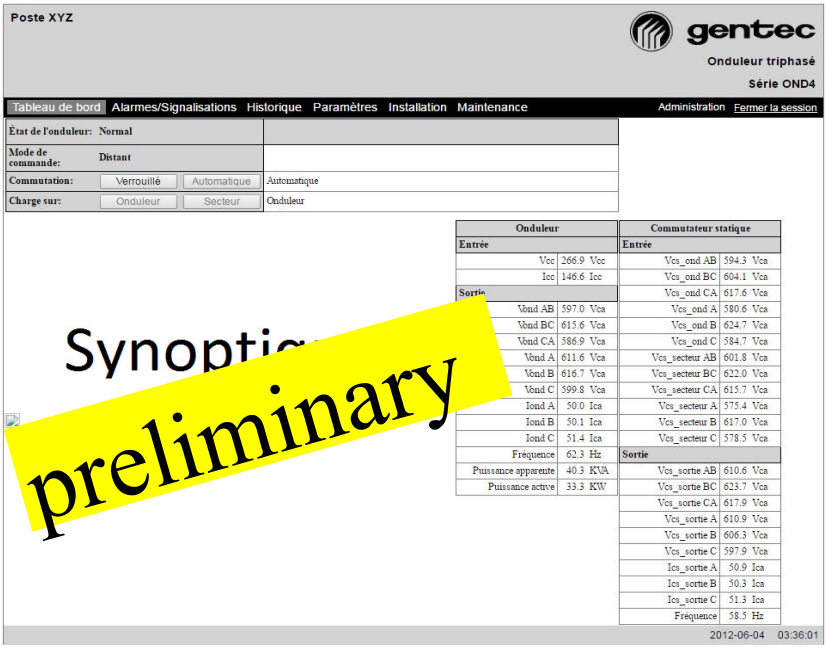
WEB ACCESS TO INFORMATION

Make your job easier by accessing the charger's WEB server!

Using any commercial WEB browser, the system provides various information pages, such as:

- A *dashboard* presenting the real-time system status.
- The actual operating *parameters* set for the system.
- The current readings for *measurements*, *alarms* and *indicators*.
- Recovery mechanisms for data *history* saved by the system.
- *Maintenance* information allowing parameters and software update.

WEB page «Dashboard» →



Alarms and indicators

- inverter failure;
- low/high Vdc voltage;
- low/high Vac voltage;
- static switch failure;
- load on bypass supply;
- bypass supply absent;
- inverter out of synchronism with the bypass supply;
- maintenance bypass switch in "bypass" position.

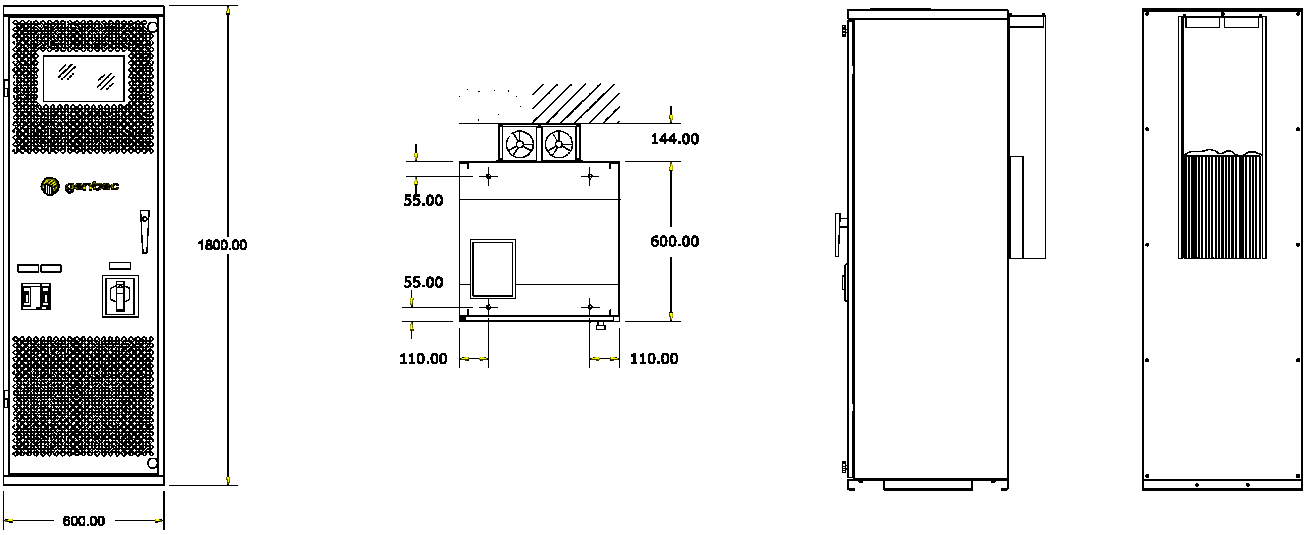
The alarms and indications use LEDs and are described on the LCD display of the control unit.

The alarms are associated with alarm contacts. Also, they may be transmitted remotely by the communication ports.

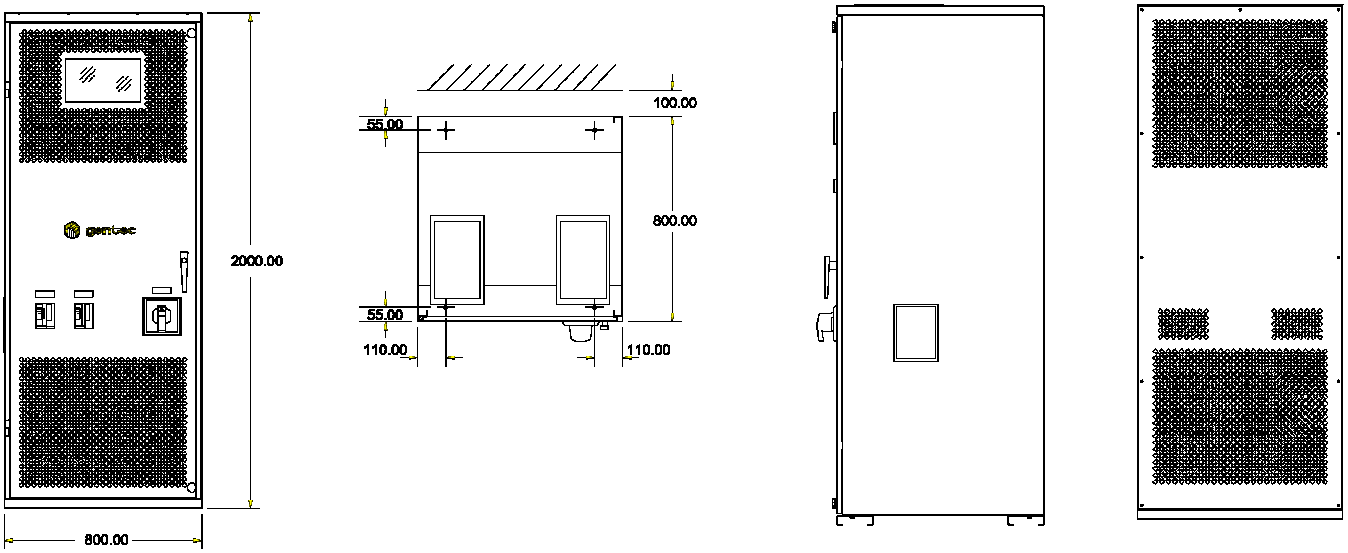
The alarm settings are easily adjustable remotely through the communication ports, or in the field with a laptop computer connected to the WEB server of the control unit.

Characteristics	
DC INPUT	
Nominal input voltage	125Vdc or 250Vdc (range 105-140Vdc or 210-280Vdc)
Protection	thermal magnetic circuit breaker, 2 poles
AC INPUT (emergency AC)	
Protection	thermal magnetic circuit breaker, 1 or 3 poles
AC OUTPUT	
Voltage	120/208/220/240/277Vac – single-phase (L,N) (note: for 240V, the third wire (L2) is not available, an additional transformer is required after the output) 208/380/480/600Vac – three-phase «Y» (L1, L2, L3, N)
Fréquence	60Hz (50Hz optional)
Power (at P.F. = 0.8)	1kVA to 20kVA single-phase / 5kVA to 80kVA three-phase
Power factor	0.7 to 1.0 inductive load
Crest Factor	3.0 (pick current value / nominal RMS current)
Voltage regulation (100% load variation)	• static (balanced load): ± 0.5% • static (100% unbalanced load): ± 2.0% • dynamic: ± 5%, returns at ± 1% within less than 3 cycles (50ms)
Frequency regulation	± 0.1%
Overload	125% for 10 min. / 150% for 60 sec.
Efficiency (full load)	≥90%
Harmonic distosion (THD)	Linear load: 3.0% max./ 100% non-linear load: 5.0% max.
Cooling	Natural convection up to 3KVA / forced over 3KVA Note: Always forced on NEMA12 cabinets
STATIC SWITCH	
Transfer time	"without interruption" 4.0ms max. (1/4 cycle)
Protection	Semiconductor fuses
Maintenance bypass switch	included
Measuring Apparatus / Communication Ports	
LCD display, 95mm x 54mm, 480 x 272, with secured access (3 levels)	- DC voltmeter, range: 0-120%, accuracy: 0.1% - DC ammeter, range: 0-150%, accuracy: 1.0% - AC voltmeter, range: 0-120%, accuracy: 0.2% - AC ammeter, range: 0-150%, accuracy: 1.0% - frequency meter, range: 50 to 70 hz, accuracy: 0.5% - active power (W) / apparent power (VA), range: 0-150%, accuracy: 1.0% - synoptic and various information/measurements
♦ 2 Ethernet ports (both optical and copper) (DNP3, HTTPS): - copper 10/100/1000Mbps on RJ-45 plug (10/100/1000BASE-X) - optical 100Mbps on duplex LC plug (100BASE-FX) ♦ or Ethernet RJ45 plug (protocol Modbus/TCP slave)	
Environmental Specifications	
Operating temperature	-10 °C—40 °C (14°F—104°F)
Storage temperature	-20 °C—70 °C (-4°F—158°F)
Relative humidity	5—95% at 40 °C (104°F) without condensing
Audible noise	65 dBA max. measured at 1.0 meter (3 feet)
Altitude derating	0% @ 0-1000 meters (3,280 feet)
Testing	
Performance and tests	CEI 62040-3
Dielectric test	CEI 62040-1
Surge Withstand Capability (SWC)	ANSI/IEEE C37.90.1/CEI 60255-22-1/-4
Electrostatic discharge (ESD)	CEI 61000-4-2
Electromagnetic compatibility(EMC)	CEI 62040-2
Fire resistance	UL94 V-0 and V-1
Environmental	CEI 60068-2-1/-2/-3
Standards	Meets CSA-C22.2 no 107.3, UL1778

Cabinets	
Dimensions (H x L x D)	cabinet A1: 1800x600x600mm (70.9 x 23.6 x 23.6 in.), freestanding, NEMA1 cabinet A2: 2000x800x800mm (78.7 x 31.5 x 31.5 in.), freestanding, NEMA1 (depth : additional clearance of 100 or 144 mm is required behind for ventilation)
Material	Cold laminated steel 2.0/3.0 mm
Cabinet Type	NEMA1/IP20 (or NEMA12/IP52)
Colour	Gray ANSI61 (Other colours on demand)



Cabinet A1, power ≤7.5KVA
(note: natural convection up to ≤3KVA)



Cabinet A2, power >7.5KVA

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