

# INV-GABI

## GRID-TIED ACTIVE BIDIRECTIONAL INVERTER



POSITIVE PROBLEM SOLVING **+ =**

**The INV-GABI is a series of active bidirectional inverters.**

Each system regenerates electricity from an energy storage device such as a battery pack into a local grid network. It can also provide battery charging capability if required. An inbuilt monitoring system synchronises with local grid conditions so that a smooth transition of energy takes place. Active power factor correction is provided by the system to regulate the AC output, allowing the unit to automatically balance capacitive or inductive loads.

- + Automatically Adjusting PF Based On Load Characteristics**
- + Suitable For Most Kinds Of Battery With Suitable BMS**
- + Connection in parallel configurations possible**
- + Intelligent Grid Monitoring Functions**
- + Complete Islanding Possible**

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## FURTHER DETAILS

The INV-GABI uses frequency signals from the grid so that users feed electricity back at the most profitable times to maximise return on investment.

Feedback can be automated to respond to grid frequency measurements, defined by user presets or controlled by the local grid provider.

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Besides feeding back into the national grid, the INV-GABI can be user set to even out peak loads within a localised circuit. For example, the system can be set to start when local demand of an industrial building reaches 200kW, so that no more than 200kW is drawn from the national grid at any one time. This allows users to meet peak electricity demands for energy intensive processes that the local infrastructure might not be capable of providing. The INV-GABI can also operate as part of a true island grid when signals are provided from an external generator, which is particularly useful for remote communities with limited grid capacity. Black start capabilities are also possible.

When used with a battery controller the system can supervise the state of charge of the battery. The INV-GABI can be used with most common types of battery when combined with a suitable battery management system including Li-ion and redox flow. On request a suitable battery system can be provided with the INV-GABI. Systems can be operated in parallel configurations when controlled by a suitable external grid demand controller in parallel to line operation mode. A MODBUS interface is provided for remote system control, as well as a front panel TFT screen. Measurements of grid voltage, current and frequency per phase are provided via the front panel, as well as measurement of effective, reactive and apparent power.

### SELECTION TABLE

| Part Number      | Nominal Power | Connected Nominal Battery Voltage | AC Mains Voltage    |
|------------------|---------------|-----------------------------------|---------------------|
| INV-GABI 400-100 | 100kW         | 400V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 400-200 | 200kW         | 400V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 550-100 | 100kW         | 550V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 550-200 | 200kW         | 550V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 550-250 | 250kW         | 550V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 550-320 | 320kW         | 550V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 800-100 | 100kW         | 800V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 800-200 | 200kW         | 800V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 800-250 | 250kW         | 800V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 800-320 | 320kW         | 800V                              | 400V ± 10%, 3L+N+PE |
| INV-GABI 800-500 | 500kW         | 800V                              | 400V ± 10%, 3L+N+PE |

Different output ranges and application/user specific options are possible. Please contact ETPS to discuss your requirements.

## TECHNICAL DATA

|                       | 100kW                                 | 200kW | 250kW | 320kW | 500kW |
|-----------------------|---------------------------------------|-------|-------|-------|-------|
| AC Mains Voltage      | 400V ± 10%, 3L+N+PE                   |       |       |       |       |
| AC Power Factor Range | 0.5 lag to 0.5 lead                   |       |       |       |       |
| Nominal AC Output     | 400V ± 10%, 3L+N+PE                   |       |       |       |       |
| Frequency             | Synchronised to AC mains, 50/60Hz ±5% |       |       |       |       |
| Waveform              | Sinusoidal                            |       |       |       |       |
| Acoustic Noise        | <75dB [A] at 1m                       |       |       |       |       |

### DISCHARGING MODE

|                             |   |
|-----------------------------|---|
| DC Voltage Range            | 300 - 450V (max. 200kVA) or 450 - 600V (max. 320kVA) or 600 - 850V                                |
| Emergency Stop              | Via floating contact  |
| Inverter Efficiency         | 60 - 90VDC  |
| Cabinet 1 Dims. [W × D × H] | 88 - 132VDC   |
| Cabinet 2 Dims. [W × D × H] | 178 - 264VDC  |
| Weight                      | 350 - 750VDC (4kVA units only)  |
| EMC                         | EN 61000-2-4 grid disturbances, EN 61000-6-2 interference immunity, EN 62040-2 transient emission |
| Safety                      | EN 62040-1 and EN 60950-1   |
| Permissible Ambient Temp.   | 0 to 40°C   |
| Climate Class               | 3K3 according to EN 60721   |
| Operating Altitude          | Up to 1000m above sea level with rated load   |
| Protection Class            | IP 20 to EN 60529 (cable access IP 00 at bottom of the floor)                                     |
| Paint Finish                | RAL 7035, textured finish   |
| Cooling                     | Forced air cooling, power and temperature dependent fan controller                                |
| Display                     | 10.4" TFT panel   |
| Interface                   | MODBUS for system control, CAN for communication to the battery management system                 |
| Connection to the UK Grid   | ER G59-3 compliant with external disconnect device  |

## OPTIONS

| CODE        | DESCRIPTION   |
|-------------|---|
| /PL-COS-PHI | Parallel to line: Cos Phi regulation. Users can set the active power and the cos phi (power factor). The AC side is regulated to achieve the specified cos phi. If the cos phi of the grid changes then the INV-GABI provides the counter energy to achieve the cos phi on the input terminals. |
| /PL-P       | Parallel to line: P [f] characteristic. When operating in parallel to the local grid, the INV-GABI will either consume or transfer power according to the frequency of the grid. For further details see summary overleaf.  |
| /PL-Q       | Parallel to line: Q [V] characteristic. When operating in parallel to the local grid, the reactive power of the INV-GABI will change according to the voltage of the grid. For further details see summary overleaf.  |
| /LL-F       | Line leading: f [state of charge] characteristic. When operating as part of an island grid, the frequency will change according to the state of charge of the connected battery. For further details see summary overleaf.  |
| /LL-V       | Line leading: V [Q] characteristic. When operating as part of an island grid, the voltage will change according to the measured reactive power. For further details see summary overleaf.   |
| /ISO        | An integrated isolation monitor that continually measures the system for earth faults. In the event of an earth fault a signal will be sent to the TFT-panel and the process control system. The unit does not switch off automatically.  |

Every effort is made to ensure that the information provided within this technical summary is accurate. However, ETPS Ltd must reserve the right to make changes to the published specifications without prior notice. Where certain operating parameters are critical for your application we advise that they be confirmed at the time of order. ETPS Ltd specialises in modifying its proven platforms to suit your needs. Please contact our office if your requirement is non-standard. Please note that your actual unit may differ from those shown.



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