# iMars BG Series

## Grid-tied Solar Inverter

Innovation, Value, Teamwork


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## About INVT

**INVT**, established in 2002, is committed to being the world's leading and respected provider of electric drive, industrial control and new energy products/service. In 2010, INVT listed as an A-share company on Shenzhen stock exchange (Stock code:002334).

INVT is a national-level high-tech company with more than 30 branch offices domestically and internationally, also has 9 subsidiaries whose business involves electric drive, industrial control, new energy, rail traction, mining explosion proof, energy management, building intelligence system and so on.

The new energy business is the important part of INVT. With years of technology accumulation and application experience on the fields of , industrial control and new energy, INVT keeps running on the road toward with three core businesses with new energy:
iMars series of grid-tied solar inverter
Wind energy inverter
iSVG series of high-voltage static var generator

INVT always aim be your mutual benefit partner and professional system solution provider.

## Milestone

- In 2010, listed as A-share Company in Shenzhen Stock Exchange establishment of INVT New Energy
- In 2009, establishment of "Inverter Engineering R&D centre" approved
- In 2007, No.1 National Brand in market shares of low and medium voltage ac drive
- In 2006, successful shareholding reform, entering oversea market
- In 2005, Second Generation inverter CH vector control series developed, leading technology tide of Chinese inverter industry
- In 2003, First Generation inverter G9/P9 independently developed launched in the market, enabling our company to rank as Top Ten Enterprise in domestic inverter industry
- In 2001, Shenzhen INVT Electric Co.,Ltd established






# iMars

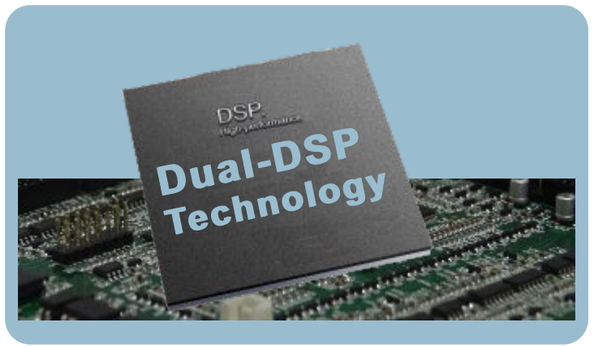
**INVT Technology Green Life with Solar**

## Grid-Tied Solar Inverter

As the important part of INVT new energy business, the solar inverter business has the strong technical background and brand support.

INVT is dedicated to researching and developing inverter topology technologies with stable performance, high efficiency and maintenance-free on solar inverter, and launched iMars series grid-tied solar inverter successfully.

With light weight and small size, iMars series inverter can be widely used in residential, roofs of city constructions, BIPV/BAPV, utility plants and other generating system.




## Dual-DSP Control Platform

With higher precision of Dual-DSP control platform
It is more stable and reliable for your solar system.


## LCD Screen Display

High precision and wide screen
Keypads control, arch design, humanization interface

- Wide LCD screen display, 3.5inches,256*192pixels LCD
- Multilingual and graphics LCD display
- Easy to view and configure system, efficiency and other records information.

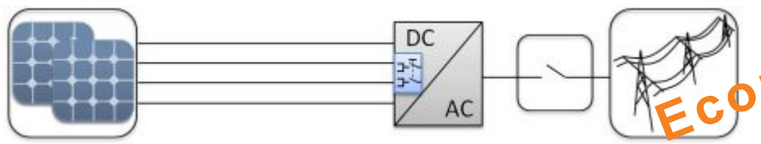
## Integrated DC Switch

Rotary Actuator Switch-Lockable off
Multi-Strings DC Input

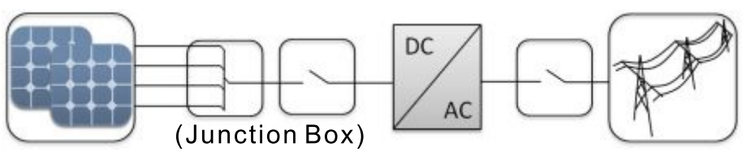
- Rotary Actuator Switch
- High speed switch (5ms max)
- Maximum torque 1Nm for easy operation
- Panel Mounting, Ip66
- Rotary Handle

Easy and Cost-effective for system Installation

1) Inverter with DC Switch

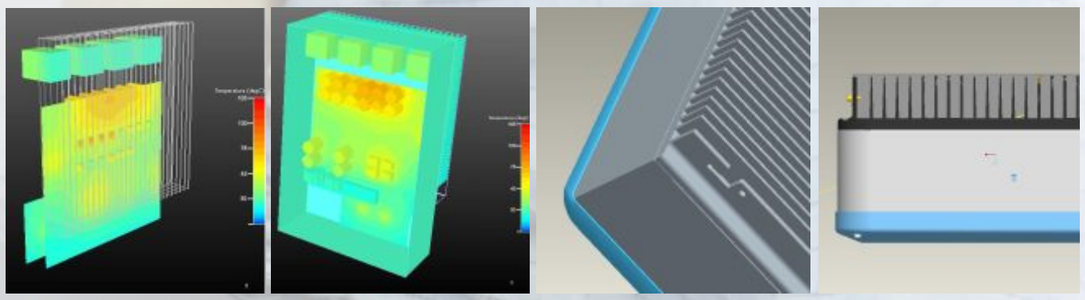



2) Without DC Switch



# Thermal Simulation Technology

With system-level thermal simulation technologies, to make sure of product's reliability and lifetime.



## Single-Phase Solar Inverter

**BG1K5TL BG2K2TL BG3KTL**

### Powerful

- Dual-DSP Control Platform
- Mult MPPT Technology
- System Level Thermal Simulation Design

### Economic

- iMars Inverters have an exceptionally low voltage which means they start earlier in the day, and shut down later at night. The operating voltage is 100-500V larger range.
- Rotary Actuator DC Switch (Lockable-off)

### Simple

- Multilingual and Graphics LCD Display (3.5 inches,256*192 pixels LCD)

## Features

- With optimized electric control technology, over **97.30%** efficiency;
- Advanced dual-MPPT algorithms, suitable for installing solar modules with different angle of dip, max tracking efficiency up to 99.99%;
- With large LCD interface, easy to view and con figure;
- Build-in a high-accuracy lock: records real-time information accuracy; keeps running for 14 days or more once system loses power;
- With perfect diagnosis, protection, records, inquires and other functions, easy troubleshooting;
- With system-level thermal simulation technologies, to make sure of products' reliability and lifetime;
- Ip65 rated and Anti-theft design, suitable for any kind of outdoor environments;
- With strong networking, flexible to support Rs485, WiFI, Ethernet, GPRS and other communication models;

## Power Efficiency

As soon as INVT iMars inverter works, it is producing a minimum of 94% efficiency which can go up to 98% efficiency. Compared to the current leading EU brands which operate at 92%, they are always performing at A Grade efficiency. Due to exceptional MPP Tracker with 99.9% efficiency this is the frequency per second with which the DC is matched to the AC the performance of the inverter is consistently high.

## Specification

| | BG1K5TL | BG2K2TL | BG3KTL |
|---|---|---|---|
| **DC Input** | | | |
| Max. DC Voltage | 500Vdc | 500Vdc | 500Vdc |
| Min. DC Voltage/Start Voltage | 100V | 100V | 100V |
| MPPT Voltage Range | 200V~450V | 200V~450V | 200V~450V |
| Max. DC Power | 1800W | 2500W | 3250W |
| Max. Input Current | 8A | 11A | 15A |
| Number of MPP Tracker /Number of Strings | 1/1 | 1/1 | 1/2 |
| DC Switch | | Integrated (Lockable-off) | |
| **Output (AC)** | | | |
| AC nominal Power | 1500W | 2200W | 3000W |
| Max. Output Current | 7.5A | 11A | 15A |
| Nominal AC Voltage | | 230Vac | |
| AC Voltage Rang | | 180~260Vac | |
| AC Grid Frequency | 50/60Hz | 50/60Hz | 50/60Hz |
| Output Current THD | | < 3% （at nominal power） | |
| Power Factor | | ⩾0.99（at nominal power） | |
| **System** | | | |
| Euro Efficiency | 96.00% | 96.10% | 96.30% |
| Max. Efficiency | 96.90% | 97.20% | 97.30% |
| Protection Class | | IP65 | |
| Internal Consumption at Night | | 1W | |
| Operating temperature range(full power) | | -25~+60℃（⩾45℃power lost） | |
| Cooling Concept | | Natural cooling | |
| Relative humidity | | 0~95%，non-condensing | |
| **Display and communications** | | | |
| Display | | 3.5 inch;Multilingual and graphics LCD display | |
| Standard Comm. Interfaces | | RS485,EXT(Optional:LAN/GPRS/WiFi) | |
| Dimension（H x W x D） | | 460*335*175mm | |
| Weight | | <16.5KG | |
| Certifications | | TÜV CE VDE 0126-1-1(VDE-AR-N4105),ENEL,G83 AS4777(AS3100) EN61000-6-1:4,EN61000-3-2:3,EN61000-11:12 | |

# Single-Phase Solar Inverter

## BG4KTL BG5KTL BG6KTL

### Powerful

- Dual-DSP Control Platform
- Multi MPPT Technology
- System Level Thermal Simulation Design

### Economic

- iMars Inverters have an exceptionally low voltage which means they start earlier in the day, and shut down later at night. The operating voltage is 100-550V larger range.
- Rotary Actuator DC Switch (Lockable-off)

### Simple

- Multilingual and Graphics LCD Display (3.5 inches,256*192 pixels LCD)

## Features

- With optimized electric control technology, over **97.60%** efficiency;
- Advanced dual-MPPT algorithms, suitable for installing solar modules with different angle of dip, max tracking efficiency up to 99.99%;
- With large LCD interface, easy to view and con figure;
- Build-in a high-accuracy lock: records real-time information accuracy; keeps running for 14 days or more once system loses power;
- With perfect diagnosis, protection, records, inquires and other functions, easy troubleshooting;
- With system-level thermal simulation technologies, to make sure of products' reliability and lifetime;
- Ip65 rated and Anti-theft design, suitable for any kind of outdoor environments;
- With strong networking, flexible to support Rs485, WiFI, Ethernet, GPRS and other communication models;

## Power Efficiency

As soon as the INVT iMars inverter works, it is producing a minimum of 94% efficiency which can go up to 98% efficiency. Compared to the current leading EU brands which operate at 92% in the market now, they are always performing at A Grade efficiency. Due to exceptional MPP Tracker with 99.9% efficiency this is the frequency per second with which the DC is matched to the AC the performance of the inverter is consistently high.

## Specification

| | BG4KTL | BG5KTL | BG6KTL |
|---|---|---|---|
| **DC Input** | | | |
| Max. DC Voltage | 550Vdc | 550Vdc | 550Vdc |
| Min. DC Voltage/Start Voltage | 100V | 100V | 100V |
| MPPT Voltage Range | 200V~500V | 200V~500V | 200V~500V |
| Max. DC Power | 4200W | 5300W | 6250W |
| Max. Input Current | 12AX2 | 14AX2 | 16AX2 |
| Number of MPP Tracker /Number of Strings | 2/2 | 2/2 | 2/2 |
| DC Switch | | Integrated (Lockable-off) | |
| **Output (AC)** | | | |
| AC nominal Power | 1500W | 2200W | 3000W |
| Max. Output Current | 20A | 26A | 29A |
| Nominal AC Voltage | | 230Vac | |
| AC Voltage Rang | | 180~260Vac | |
| AC Grid Frequency | 50/60Hz | 50/60Hz | 50/60Hz |
| Output Current THD | | < 3% （at nominal power） | |
| Power Factor | | ⩾0.99（at nominal power） | |
| **System** | | | |
| Euro Efficiency | 96.50% | 96.50% | 96.50% |
| Max. Efficiency | 97.40% | 97.60% | 97.60% |
| Protection Class | | IP65 | |
| Internal Consumption at Night | | <1W | |
| Operating temperature range(full power) | | -25~+60℃（⩾45℃power lost） | |
| Cooling Concept | | Natural cooling | |
| Relative humidity | | 0~95%，non-condensing | |
| **Display and communications** | | | |
| Display | | 3.5 inch;Multilingual and graphics LCD display | |
| Standard Comm. Interfaces | | RS485,EXT(Optional:LAN/GPRS/WiFi) | |
| Dimension（H x W x D） | | 560*415*190mm | |
| Weight | | <25.5KG | |
| Certifications | | TÜV CE VDE 0126-1-1(VDE-AR-N4105),ENEL,G59 AS4777(AS3100) EN61000-6-1:4,EN61000-3-2:3,EN61000-11:12 | |

# Three-Phase Solar Inverter

## BG10KTL BG12KTL BG15KTL

### Powerful

- Dual-DSP Control Platform
- Multi MPPT Technology
- System Level Thermal Simulation Design

### Economic

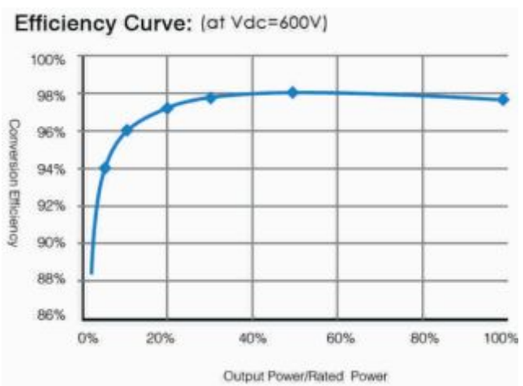
- iMars Inverters have an exceptionally low voltage which means they start earlier in the day, and shut down later at night. The operating voltage is 200-1000V larger range.
- Rotary Actuator DC Switch (Lockable-off)

### Simple

- Multilingual and Graphics LCD Display (3.5 inches,256*192 pixels LCD)

## Features

- With optimized electric control technology, over 98% efficiency;
- Advanced dual-MPPT algorithms, suitable for installing solar modules with different angle of dip, max tracking efficiency up to 99.99%;
- With the latest three-level control technology, to make sure output with more little harmonic and leakage current, and make sure more secure for grid;
- With wide range voltage for DC input, the MPPT tracking up to 800V, easy to design solar system;
- With large LCD interface, easy to view and con figure;
- Build-in a high-accuracy lock: records real-time information accuracy; keeps running for 14 days or more once system loses power;
- With perfect diagnosis, protection, records, inquires and other functions,easy troubleshooting;
- With system-level thermal simulation technologies, to make sure of products' reliability and lifetime;
- Ip65 rated and Anti-theft design, suitable for any kind of outdoor environments;
- With strong networking, flexible to support Rs485, WiFI, Ethernet, GPRS and other communication models;




## Specification

| | BG10KTL | BG12KTL | BG15KTL |
|---|---|---|---|
| **DC Input** | | | |
| Max. DC Voltage | 1000Vdc | 1000Vdc | 1000Vdc |
| Min. DC Voltage/Start Voltage | 200V | 200V | 200V |
| MPPT Voltage Range | 250V~800V | 285V~800V | 360V~800V |
| Max. DC Power | 10400W | 12500W | 15600W |
| Max. Input Current | 21Ax2 | 21AX2 | 21AX2 |
| Number of MPP Tracker /Number of Strings | 2/3 | 2/3 | 2/3 |
| DC Switch | | Integrated (Lockable-off) | |
| **Output (AC)** | | | |
| AC nominal Power | 10kW | 12kW | 15kW |
| Max. Output Current | 15A | 20A | 24A |
| Nominal AC Voltage | | 400Vac | |
| AC Voltage Rang | | 310~450Vac | |
| AC Grid Frequency | 50/60Hz | 50/60Hz | 50/60Hz |
| Output Current THD | | < 3% （at nominal power） | |
| Power Factor | | ⩾0.99（at nominal power） | |
| **System** | | | |
| Euro Efficiency | | 97.20% | |
| Max. Efficiency | | 98.00% | |
| Protection Class | | IP65 | |
| Internal Consumption at Night | | 1W | |
| Operating temperature range(full power) | | -25~+60℃（⩾45℃power lost） | |
| Cooling Concept | | Air cooling | |
| Relative humidity | | 0~95%，non-condensing | |
| **Display and communications** | | | |
| Display | | 3.5 inch;Multilingual and graphics LCD display | |
| Standard Comm. Interfaces | | RS485,EXT(Optional:LAN/GPRS/WiFi) | |
| Dimension（H x W x D） | | 636*494*206mm | |
| Weight | | <35.5kg | |
| Certifications | | TÜV CE VDE 0126-1-1(VDE-AR-N4105),ENEL,G59 AS4777(AS3100) EN61000-6-1:4,EN61000-3-2:3,EN61000-11:12 | |

# Software

## WinExpert Monitoring System

### Features

The standard monitoring package will provide basic PV production data via an RS485 interface (Optional: GPRS / WiFi / LAN). You will see the kWh produced for the day, the week, the month and the cumulative production of your PV system.

#### Multi-level User Management

• Guest, as a primary user, can browse over software setting and PV system parameters
• Administrator, as a professional user, can change the software setting, modify the system configuration, and so on

#### User-friendly Interface

• Simple menu bar and inspection windows
• Can be reduced to the sticker windows
• Visualization of alarm

#### Powerful Analysis Capabilities

• kWh performance by day, week, month, year
• CO2 emission reductions, power generation profit

### Specification

| | |
|---|---|
| Languages | German English Italian Chinese |
| Communication | Rs485 / Ethernet / WiFi / GPRS |
| Features | • User login<br>• The system generating capacity, economic benefits and environmental benefits<br>• View and print the system information<br>• View the inverters information:<br>(a) Real-time operating parameters<br>(b) Real-time operating status<br>(c) Historical data<br>(d) Technical parameters of the inverter<br>• Add and remove inverter<br>• Communication management<br>• Software settings<br>• Help and E-mail system |



# Software

## SysExpert System Design

#### Easy-to-use and Professional

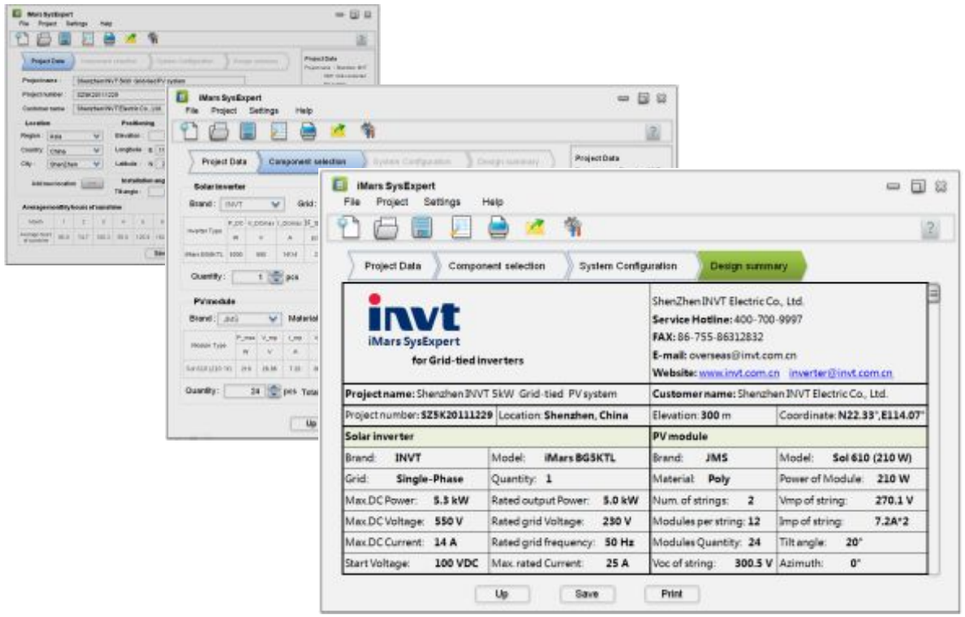
• User-friendly interface
• Three-step design process
• Professional design report

#### Constantly Updated Database Support

• Solar module database
• iMars grid-tied solar inverter database
• Geographic meteorological database

#### Powerful System of Mathematical Analysis Model

• Components match analysis model
• Power loss analysis model
• CO2 emission reductions analysis model
• Power generation profit analysis model




## How to Design Solar PV System

1. Solar PV system sizing
   a) Determine power consumption demands
   b) Calculate total Watt-hours per day needed from the PV modules.

Multiply the total appliances Watt-hours per day to get the total Watt-hours per day which must be provided by the panels.

2. Size the PV modules

Different size of PV modules will produce different amount of power. To find out the sizing of PV module, the total peak watt produced needs. The peak watt (Wp) produced depends on size of the PV module and climate of site location.

3. Inverter sizing

For grid tie systems or grid connected systems, the input rating of the inverter should be same as PV array rating to allow for safe and efficient operation.


# iMars

**INVT Technology Green Life with Solar**

## WHY INVT ?

As one of solar inverter providers, INVT offers grid tie solar inverters and power management solutions, and owns competitive advantage of providing leading edge, innovative power solutions. INVT has 30 offices domestically ,foreign offices, maintenance networking centre and after -sale service centre, stereoscopic coverage and quick response of marketing service networks.

Innovation is the endless drive for company's develpoment.

Professional R&D team lays the foundation for the take-off of INVT.

(TUV on-the scene laboratory certification, leading testing platform for EMC, reliablity and safety ect)

Quality is the key to success for INVT in competition. Quality management starts from every detail in the whole process.

**Please check our website : www.invt.com**