# iMars B Series

## Grid-tied Solar Inverter

Innovation, Value, Teamwork


invt

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| | | | | |
|---|---|---|---|---|
| Electric Drive: | ■ Frequency Inverter | ■ Intelligent Elevator Control System | ■ Traction Drive | |
| Industrial Eontrol: | ■ Servo & Motion Control | ■ Motor & Electric Spindle | ■ PLC | ■ HMI |
| New Energy: | ■ SVG | ■ Solar Inverter | ■ UPS | ■ Online Energy Management System |




201208 (V3.0)


G83/G59 C10/11 TF3.2.1

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# About INVT

SHENZHEN INVT ELECTRIC CO., LTD, which was established in 2002, is a National Hi-Tech Company and the first China Drive Engineering Centre, principally engaged in the R&D, manufacturing and marketing of renewable energy and low, medium and high voltage inverters in the fields of electric drive and industrial control. In 2010, we officially listed as an A-share company on the Shenzhen stock exchange. (Stock code: 002334).

Over 30 representative offices nationwide, 1600 employees, 4 large-scale production sites and marketing networks throughtout more than 60 countries and regions globally, all of which guarantees the reliable products and prompt services to customers.

With the mastering of mature vector control technology and special inverter control technology in various industries, as well as breakthrough of four-quadrant control technology, INVT has been keeping ranking the top among national inverter manufacturers. The main products include general-purpose inverters & special-purpose inverters, Servo drive, brake unit and RBU to electrical drive and industrial control application.

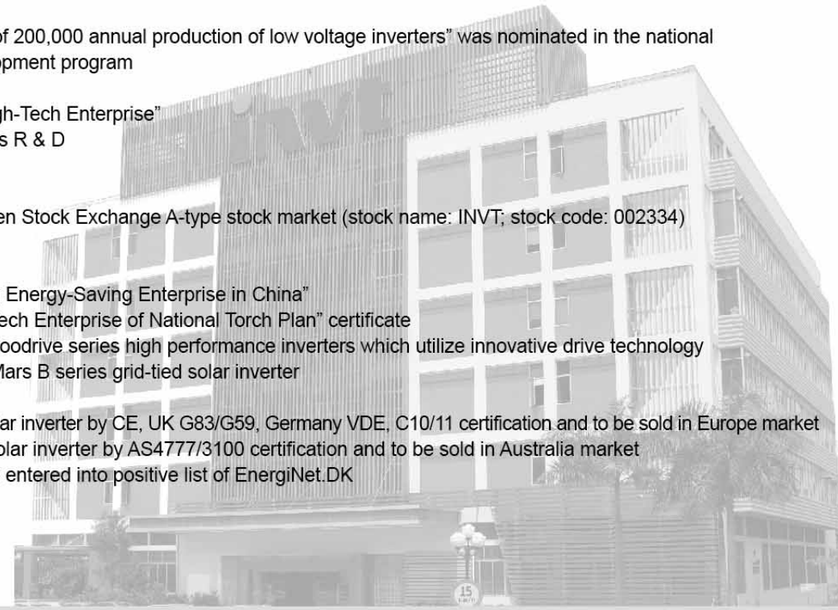
In 2009, we started focusing on the renewable energy products, grid-tied solar inverters and wind power converters. With the strong R&D and technical support, the solar inverter becomes the important part of INVT renewable energy.

INVT aims to be the world-leading, respected electrical drive, industrial control, renewable energy products and service provider.

For more information, please visit www.invt.com ...

## Milestone

- 2002 - Shenzhen INVT Electric Co., Ltd was established
  - Independently developed G9/P9/ZS5 series first generation products
- 2003 - Top 10 Domestic Inverter Brand
- 2004 - Honored with “Shenzhen High-Tech Enterprise” and “Shenzhen Software Enterprise”
- 2005 - Successfully launched CHV series high performance current vector frequency inverter known for domestic leading technology
- 2006 - Annual turnover exceeded 100 million RMB
  - Successfully made the transition to a stock corporation, start the overseas market
- 2007 - Successfully developed CHH series medium voltage drive which passed the tests of the Tianjin Drive Equipment Institute
  - No. 1 in top 10 domestic inverter manufacturers
- 2008 - “Industrialization project of 200,000 annual production of low voltage inverters” was nominated in the national high-tech industry development program
- 2009 - Certified as “National High-Tech Enterprise”
  - Start iMars solar products R & D
  - Set up the Indian office
- 2010 - Was listed in the Shenzhen Stock Exchange A-type stock market (stock name: INVT; stock code: 002334)
  - Set up the Russian office
- 2011 - Became an “Outstanding Energy-Saving Enterprise in China”
  - Certified as “Key High-Tech Enterprise of National Torch Plan” certificate
  - Successfully launched Goodrive series high performance inverters which utilize innovative drive technology
  - Successfully launched iMars B series grid-tied solar inverter
- 2012 - iMars B series grid-tied solar inverter by CE, UK G83/G59, Germany VDE, C10/11 certification and to be sold in Europe market
  - iMars B series grid-tied solar inverter by AS4777/3100 certification and to be sold in Australia market
  - INVT solar inverters were entered into positive list of EnergiNet.DK
  - Set up the Brazil office







# iMars

## INVT Technology Green Life with Solar

### Grid-Tied Solar Inverter

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

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

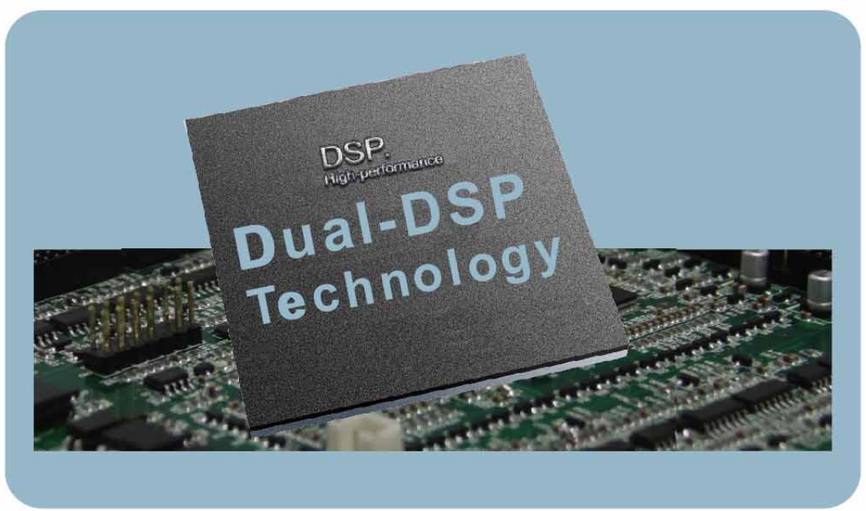
With light weight and small size, iMars series solar inverter can be widely used in residential, roofs of city constructions, BIPV/BAPV, utility plants and other power generating system.

INVT always aims to be your mutual benefit partner and professional solar products and services provider.

## INVT, the top brand of solar inverter in China

# Dual-DSP Control Platform

Higher precision of Dual-DSP control platform
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
- Multilingual and graphics LCD display
- Easy to view and configure system, efficiency and other records information.


# Integrated DC Switch

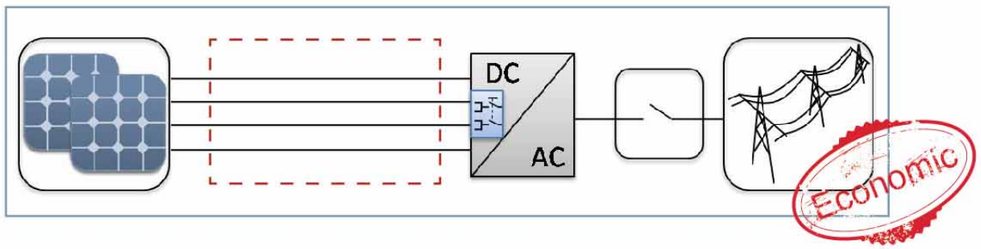
Rotary Actuator Switch (Lockable-off)

- High speed switch (<5ms)
- Maximum torque 1Nm for easy operation
- Panel Mounting, IP66
- Rotary Handle

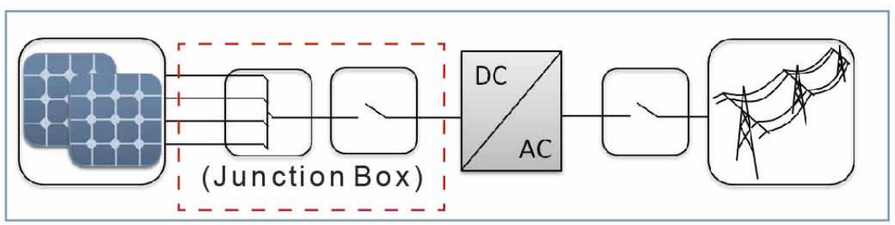
# Multi-String DC Input

## Easy and Cost-effective for system Installation

- Inverter with DC Switch



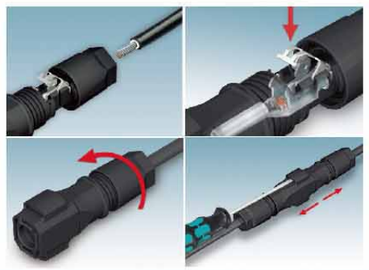

- Inverter without DC Switch



## Sunclix connectors
### easy, reliable and toolless

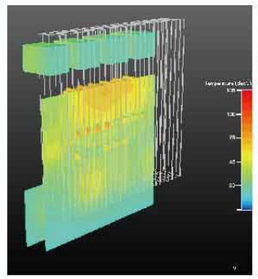
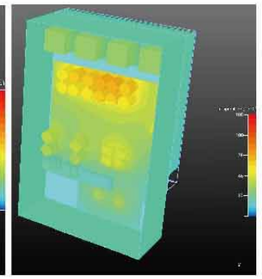
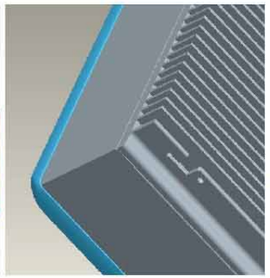
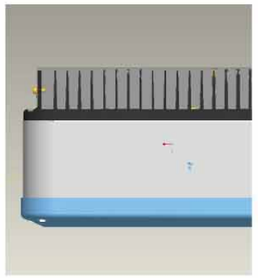
- Easy connection with DC plug-in connectors
- Versions for conductor cross sections of 2.5-6mm²
- Disconnection with a screwdriver only
- Made of MPPE
- IP68 protection (24h/2m)





## Thermal Simulation Technology

- System-level thermal simulation technologies
- High reliability and longer lifetime.

# Single-phase Solar Inverter

**BG1K5TL BG2K2TL BG3KTL**

## Powerful technologies

- Dual-DSP Control Platform
- Advanced MPPT technology
- System-Level Thermal Simulation Design

## High efficiency

- Ultra-low start voltage (100V), longer production time
- MPPT efficiency up to 99.99%

## Simple monitoring

- 3.5-inch large LCD human-machine interface, can be multi-language graphic display, without requiring additional monitoring costs

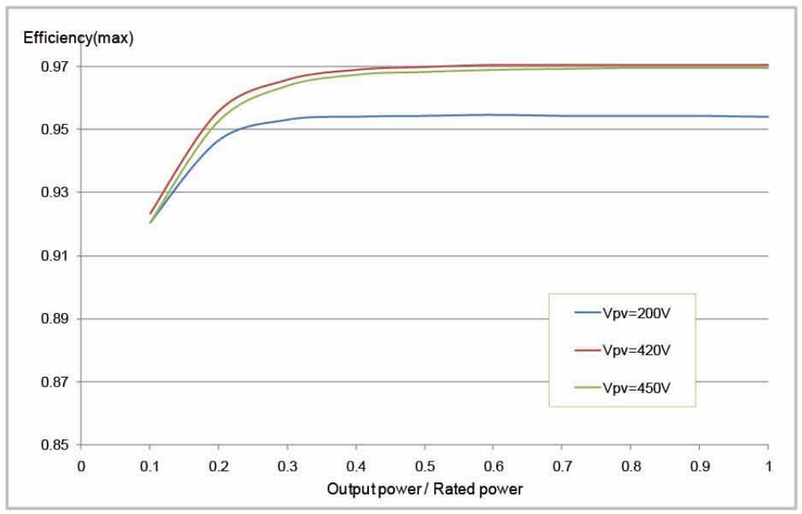
## Convenient operation

- SUNCLIX DC connectors
- AC waterproof connectors
- Communication waterproof connectors
- Wall Mounting

## Features

- Optimized electric control technology, over 97.30% efficiency;
- Advanced and high efficiency MPPT algorithms, max tracking efficiency up to 99.99%;
- Large LCD interface, easy to view and configure;
- Build-in a high-accuracy lock: records real-time information accuracy; keeps running for 14 days or more once system loses power;
- Perfect diagnosis, protection, records, inquires and other functions, easy troubleshooting;
- 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;
- Strong networking, flexible to support RS485, WiFi, Ethernet, GPRS and other communication models;

## Power Efficiency




## Specification

| | BG1K5TL | BG2K2TL | BG3KTL |
|---|---|---|---|
| **Input (DC)** | | | |
| Max. DC voltage(V) | 500 | | |
| Starting voltage(V) | 100 | | |
| MPPT range(V) | 180 - 450 | 180 - 450 | 200 - 450 |
| Number of MPPT/ string per MPPT | 1/1 | 1/1 | 1/2 |
| Max. DC power(W) | 1800 | 2500 | 3250 |
| Max. DC current(A) per MPPT x Number of MPPT | 8x1 | 11x1 | 15x1 |
| DC switch | Integrated (Lockable-off) | | |
| **Output (AC)** | | | |
| Rated output power (W) | 1500 | 2200 | 3000 |
| Max. AC output current(A) | 7.5 | 11 | 15 |
| AC Voltage Rang | 180~270Vac | | |
| | According to VDE0126-1-1(VDE-AR-N4105), G83/1, G59/2, C10/11, TF3.2.1, AS4777/3100, ENEL | | |
| Grid Frequency | 50Hz（47~51.5Hz）/ 60Hz（57.5~61.5Hz） | | |
| Power factor | ≥0.99（at nominal power） | | |
| Output Current THD | < 3%（at nominal power） | | |
| AC connection | Single-phase(L, N, PE) | | |
| **System** | | | |
| Cooling | Natural cooling | Natural cooling | Natural cooling |
| Maximum efficiency | 96.90% | 97.20% | 97.30% |
| European efficiency | 96.00% | 96.10% | 96.30% |
| MPPT efficiency | 99.99% | | |
| Protection degree | IP65 | | |
| Power consumption at night | <1W | | |
| Isolation mode | Transformerless | | |
| Running temperature | -25℃～+60℃, Derate after 45℃ | | |
| Relative humidity | 0~95%, No condensation | | |
| Protection | DC isolation monitoring, DC monitoring, Grounding fault monitoring, Grid monitoring, Island protection, Overvoltage and Short circuit protection, etc. | | |
| **Display and Communication** | | | |
| Display | 3.5inches LCD displaying, support backlit display and night display | | |
| System language | English, German, Italian, French and Chinese | | |
| Standard communication mode | RS485 | | |
| Optional communication mode | WiFi, Ethernet, GPRS(External modular design, connected to EXT) | | |
| **Mechanical Parameters** | | | |
| Dimension(H x W x D mm) | 460x328x172 | | |
| Weight(KG) | ≤16.5 | | |
| Installation | Wall Mounting | | |
| **Others** | | | |
| DC terminal | SUNCLIX water-proof terminal | | |
| Certifications | TÜV, CE, VDE0126-1-1(VDE-AR-N4105), G83/1, G59/2, C10/11, TF3.2.1, AS4777/3100, ENEL, EN61000-6-1:4, EN61000-3-2:3, EN61000-11:12 | | |

# Single-phase Solar Inverter

**BG4KTL BG5KTL BG6KTL**

## Powerful technologies

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

## High efficiency

- Ultra-low start voltage (100V), longer production time
- MPPT efficiency up to 99.99%

## Simple monitoring

- 3.5-inch large LCD human-machine interface, can be multi-language graphic display, without requiring additional monitoring costs

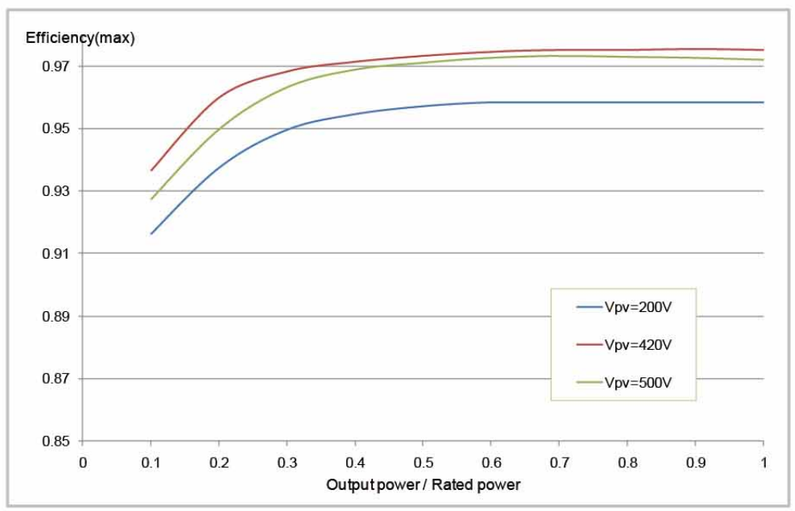
## Convenient operation

- SUNCLIX DC connectors
- AC waterproof connectors
- Communication waterproof connectors
- Wall Mounting

## Features

- 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%;
- Large LCD interface, easy to view and configure;
- Build-in a high-accuracy lock: records real-time information accuracy; keeps running for 14 days or more once system loses power;
- Perfect diagnosis, protection, records, inquires and other functions, easy troubleshooting;
- 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;
- Strong networking, flexible to support Rs485, WiFi, Ethernet, GPRS and other communication models;

## Power Efficiency




## Specification

| | BG4KTL | BG5KTL | BG6KTL |
|---|---|---|---|
| **Input (DC)** | | | |
| Max. DC voltage(V) | 550 | | |
| Starting voltage(V) | 100 | | |
| MPPT range(V) | 200 - 500 | 200 - 500 | 200 - 500 |
| Number of MPPT / string per MPPT | 2/2 | 2/2 | 2/2 |
| Max. DC power(W) | 4300 | 5300 | 6250 |
| Max. DC current(A) per MPPT x Number of MPPT | 12x2 | 14x2 | 16x2 |
| DC switch | Integrated (Lockable-off) | | |
| **Output (AC)** | | | |
| Rated output power (W) | 4000 | 5000 | 6000 |
| Max. AC output current(A) | 20 | 26 | 29 |
| AC Voltage Rang | 180~270Vac | | |
| | According to VDE0126-1-1(VDE-AR-N4105), G83/1, G59/2, C10/11, TF3.2.1, AS4777/3100, ENEL | | |
| Grid Frequency | 50Hz（47~51.5Hz）/ 60Hz（57.5~61.5Hz） | | |
| Power factor | ⩾0.99（at nominal power） | | |
| Output Current THD | < 3% （at nominal power） | | |
| AC connection | Single-phase(L, N, PE) | | |
| **System** | | | |
| Cooling | Natural cooling | Natural cooling | Fan cooling |
| Maximum efficiency | 97.40% | 97.60% | 97.60% |
| European efficiency | 96.50% | 96.50% | 96.50% |
| MPPT efficiency | 99.99% | | |
| Protection degree | IP65 | | |
| Power consumption at night | <1W | | |
| Isolation mode | Transformerless | | |
| Running temperature | -25℃～+60℃, Derate after 45℃ | | |
| Relative humidity | 0~95%, No condensation | | |
| Protection | DC isolation monitoring, DC monitoring, Grounding fault monitoring, Grid monitoring, Island protection, Overvoltage and Short circuit protection, etc. | | |
| **Display and Communication** | | | |
| Display | 3.5inches LCD displaying, support backlit display and night display | | |
| System language | English, German, Italian, French and Chinese | | |
| Standard communication mode | RS485 | | |
| Optional communication mode | WiFi, Ethernet, GPRS(External modular design, connected to EXT) | | |
| **Mechanical Parameters** | | | |
| Dimension(H x W x D mm) | 560x415x190 | | |
| Weight(KG) | ⩽25.5 | | |
| Installation | Wall Mounting | | |
| **Others** | | | |
| DC terminal | SUNCLIX water-proof terminal | | |
| Certifications | TÜV, CE, VDE0126-1-1(VDE-AR-N4105), G83/1, G59/2, C10/11, TF3.2.1, AS4777/3100, ENEL, EN61000-6-1:4, EN61000-3-2:3, EN61000-11:12 | | |

# Three-Phase Solar Inverter

**BG6KTR BG8KTR BG10KTR BG12KTR BG15KTR**

## Powerful technologies

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

## High efficiency

- Ultra-low start voltage (180V/200v), longer production time
- MPPT efficiency up to 99.99%

## Simple monitoring

- 3.5-inch large LCD human-machine interface, can be multi-language graphic display, without requiring additional monitoring costs

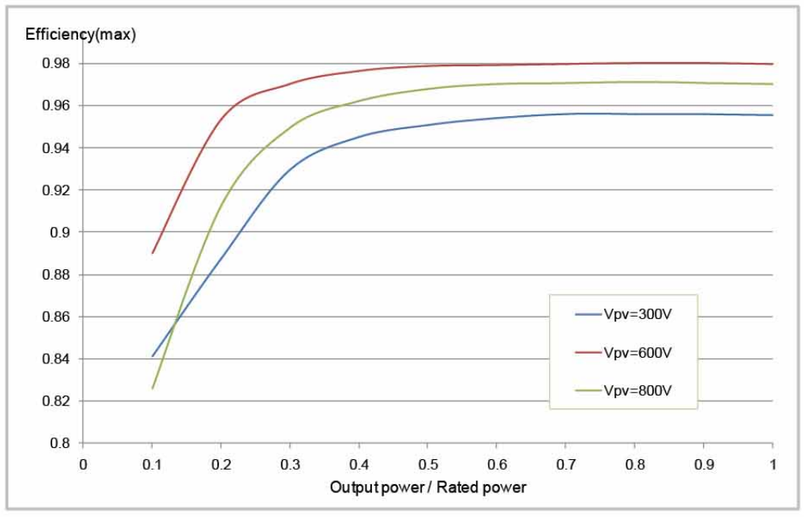
## Convenient operation

- SUNCLIX DC connectors
- AC waterproof connectors
- Communication waterproof connectors
- Wall Mounting

## Features

- 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%;
- Large LCD interface, easy to view and configure;
- Build-in a high-accuracy lock: records real-time information accuracy; keeps running for 14 days or more once system loses power;
- Perfect diagnosis, protection, records, inquires and other functions, easy troubleshooting;
- 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;
- Strong networking, flexible to support Rs485, WiFi, Ethernet, GPRS and other communication models;

## Power Efficiency




## Specification

| | BG6KTR | BG8KTR | BG10KTR | BG12KTR | BG15KTR |
|---|---|---|---|---|---|
| **Input (DC)** | | | | | |
| Max. DC voltage(V) | 1000 | | | | |
| Starting voltage(V) | 180 | | 200 | | |
| MPPT range(V) | 200 - 1000 | 200 - 1000 | 250 - 1000 | 285 - 1000 | 360 - 1000 |
| Number of MPPT / string per MPPT | 2/2 | 2/2 | 2/3 | 2/3 | 2/3 |
| Max. DC power(W) | 6400 | 8400 | 10400 | 12500 | 15600 |
| Max. DC current(A) per MPPT x Number of MPPT | 16x2 | 21x2 | 21x2 | 21x2 | 21x2 |
| DC switch | Integrated (Lockable-off) | | | | |
| **Output (AC)** | | | | | |
| Rated output power (W) | 6000 | 8000 | 10000 | 12000 | 15000 |
| Max. AC output current(A) | 10 | 13 | 15 | 20 | 24 |
| AC Voltage Rang | 320~460Vac | | | | |
| | According to VDE0126-1-1(VDE-AR-N4105), G83/1, G59/2, C10/11, TF3.2.1, AS4777/3100, ENEL | | | | |
| Grid Frequency | 50Hz(47~51.5Hz) / 60Hz(57~61.5Hz) | | | | |
| Power factor | -0.9~+0.9 (adjustable) | | | | |
| Output Current THD | < 3% （at nominal power ） | | | | |
| AC connection | Three-phase(L1, L2, L3, N, PE) | | | | |
| **System** | | | | | |
| Cooling | Fan cooling | Fan cooling | Fan cooling | Fan cooling | Fan cooling |
| Maximum efficiency | 97.50% | 97.50% | 98.00% | 98.00% | 98.00% |
| European efficiency | 97.00% | 97.00% | 97.50% | 97.50% | 97.50% |
| MPPT efficiency | 99.99% | | | | |
| Protection degree | IP65 | | | | |
| Power consumption at night | <1W | | | | |
| Isolation mode | Transformerless | | | | |
| Running temperature | -25℃～+60℃, Derate after 45 ℃ | | | | |
| Relative humidity | 0~95%, No condensation | | | | |
| Protection | DC isolation monitoring, DC monitoring, Grounding fault monitoring, Grid monitoring, Island protection, Overvoltage and Short circuit protection, etc. | | | | |
| **Display and Communication** | | | | | |
| Display | 3.5inches LCD displaying, support backlit display and night display | | | | |
| System language | English, German, Italian, French and Chinese | | | | |
| Standard communication mode | RS485 | | | | |
| Optional communication mode | WiFi, Ethernet, GPRS(External modular design, connected to EXT) | | | | |
| **Mechanical Parameters** | | | | | |
| Dimension(H x W x D mm) | 656x494x206 | | | | |
| Weight(KG) | ⩽35.5 | | | | |
| Installation | Wall Mounting | | | | |
| **Others** | | | | | |
| DC terminal | SUNCLIX water-proof terminal | | | | |
| Certifications | TÜV, CE, VDE0126-1-1(VDE-AR-N4105), G83/1, G59/2, C10/11, TF3.2.1, AS4777/3100, ENEL, EN61000-6-1:4, EN61000-3-2:3, EN61000-11:12 | | | | |

# iMars WinExpert

## Solar Inverter and PV System Monitoring Software

Introduction

iMars WinExpert is designed specifically for iMars B series grid-tied solar inverter, for monitoring of grid-tied PV system. The user can use the PC or handheld terminal equipment to connect iMars solar inverter. iMars WinExpert can display and record the real-time parameters, status, historical data and alarm information of the overall PV system and the single iMars solar inverter.

## Features

**Multi-level User Management**
- Guest, as a primary user, can browse over software settings and PV system parameters;
- Administrator, as a professional user, can change the software settings; modify the system configuration, and so on;

**User-friendly Interface**
- Simple menu bar and inspection window;
- Can be reduced to the sticker window;
- Visualization of alarm;

**Powerful Analysis Capabilities**
- kWh performance by day, week, month, year;
- $CO_2$ emission reductions, power generation profit;

## Specification

| | iMars WinExpert |
|---|---|
| Languages | English, Chinese, German, French, Italian |
| System Requirements | WIN2000/XP/WIN2003/VISTA/WIN7 |
| Hardware (Minimum Requirements) | 1. Processor: PIII 800 MHz (XP), P4 1 GHz (Vista, Windows 7)<br>2. Main memory: 512 MB (XP), 1 GB (Vista, Windows 7)<br>3. Free hard drive space: 80GB<br>4. Resolution: 1024 x 768 pixels |
| Communication | RS485, Ethernet, WIFI, GPRS |
| Software Features | 1.User login<br>2.The system generating capacity, economic benefits and environmental benefits<br>3.Software settings<br>4.View and print the system information<br>5.View the inverters real-time status<br>6.Add and remove inverters<br>7.Communication management<br>8.E-mail system |



# iMars SysExpert

## PV System Design Software

Introduction

iMars SysExpert, an easy-to-use professional grid-tied PV system design software, is designed specifically for iMars B series grid-tied solar inverter. By three steps of editing system information, component selection and system configuration, you will finish a single-phase or three-phase photovoltaic grid-tied power system design and output a professional design report within a few minutes.

## Features

**Easy-to-use and Professional**
- User-friendly Interface;
- Three-step design process;
- Professional design report;

**Constantly Updated Database Support**
- Solar module database;
- INVT iMars grid-tied solar inverter database;
- Geographic meteorological database;

**Powerful System of Mathematical Analysis Model**
- Components match analysis model;
- Power loss analysis model;
- $CO_2$ emission reductions analysis model;
- Power generation profit analysis model.

## How to Design PV System?

**Solar PV system sizing**
- Determine power consumption demands
- 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.

**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.

**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.

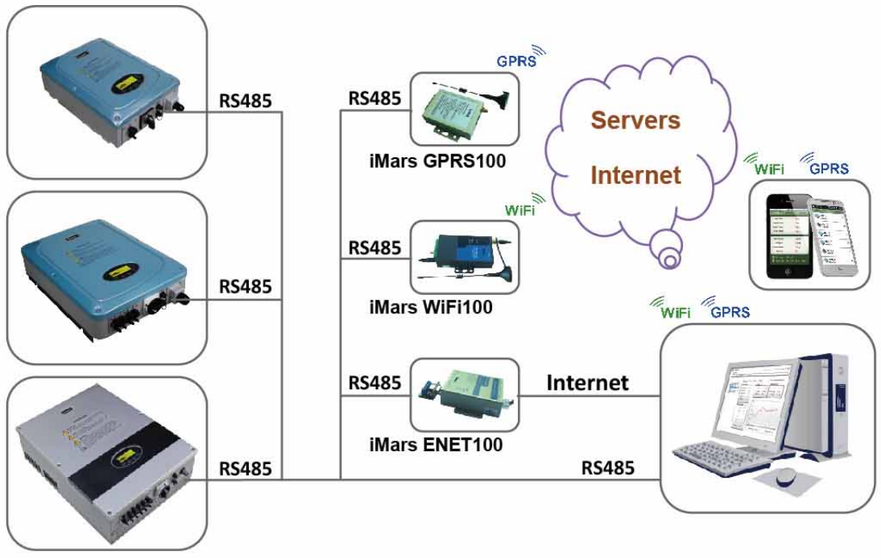
## Specification

| | iMars SysExpert |
|---|---|
| Languages | English, Chinese, German, French, Italian |
| System Requirements | WIN2000/XP/WIN2003/VISTA/WIN7 |
| Hardware (Minimum Requirements) | 1. Processor: PIII 800 MHz (XP), P4 1 GHz (Vista, Windows 7)<br>2. Main memory: 512 MB (XP), 1 GB (Vista, Windows 7)<br>3. Free hard drive space: 80GB<br>4. Resolution: 1024 x 768 pixels |
| Software Features | 1. New Project<br>(1) Project Data<br>(2) Component Selection<br>(3) System Configuration<br>(4) Design Summary<br>2. Open Project<br>3. Design Guide |

# Communication Accessories

| Model | | Specification |
|---|---|---|
| iMars ENET100 |  | Serial Port: RS485 1pcs<br>Ethernet: 10/100Mpbs 1pcs<br>Operating Voltage: 9~24VDC(Recommend 12VDC)<br>Operating Current: <200mA<br>Operating Temperature: -25℃~+85℃<br>Storage Temperature: -60℃~+125℃<br>Work Humidity: 5~95%RH Non-condensing<br>Size: 99×65×25.5mm<br>Driver Support: Windows 98 / ME / 2000 / XP / 2003 / Vista / Windows 7 32-bit |
| iMars GPRS100 |  | Serial Port: RS485 terminal blocks 1pcs<br>Card Slot: SIM Slot 1pcs<br>Mode: DTU(Default) , SMS MODEM and MODEM<br>Operating Frequency: 850/ 900/ 1800/ 1900 MHz<br>Operating Voltage: +5～+24VDC(Recommend 12VDC)<br>Operating Current: <200mA<br>Operating Temperature: -40℃~+80℃<br>Storage Temperature: -45℃~+125℃<br>Work Humidity: 20~95%RH Non-condensing<br>Size: 82×59×25mm<br>Driver Support: Windows 98 / ME / 2000 / XP / 2003 / Vista / Windows 7 32-bit |
| iMars WiFi100 |  | Serial Port: RS485 terminal blocks 1pcs<br>WiFi Transmission Distance: about 100m(no barrier)<br>Ethernet: 10/100Mpbs 1pcs<br>Operating Voltage: +7～+30VDC(Recommend 12VDC)<br>Operating Current: <200mA<br>Operating Temperature: -25℃~+65℃<br>Storage Temperature: -30℃~+70℃<br>Work Humidity: 5~95%RH Non-condensing<br>Size: 115×80×26mm<br>Configure Environment: IE browser configuration |

## iMars B series solar inverter communication diagram






# 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 development.
Professional R&D team lays the foundation for the take-off of INVT.
(TUV witness laboratory certification, leading testing platform for EMC, reliability and safety etc.)
Quality is the key to success for INVT in competition. Quality management starts from every detail in the whole process.
For more information, please visit INVT solar website: www.invt-solar.com.


## Contact Us

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