

P O W E R  
- I N G ●  
T O M O -  
R R O W ●

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# Off-grid Energy Storage Solutions



# Overview

PV Off-grid Solutions use photovoltaic power to solve the household electricity, domestic water and work electricity demand of residents, schools or small factories in areas without or in shortage of electricity, and areas suffering from power instability. Being economical, clean, environmentally friendly and noise-free, photovoltaic power can partially or completely replace the power generation function of a diesel generator.

Growatt has complete high-frequency off-grid inverter, low frequency off-grid inverter, MPPT controller, solar pump inverter, and related lithium battery as well as monitoring products, which can form 3-30 kW photovoltaic off-grid systems according to the needs of practical applications.



High Frequency Inverter

Low Frequency Inverter



MPPT Controller

Solar pump Inverter



# Solutions

## Application scenarios of the high frequency inverter

Suitable for the area without impact loads (like motors) but without or in shortage of electricity and areas suffering from power instability.

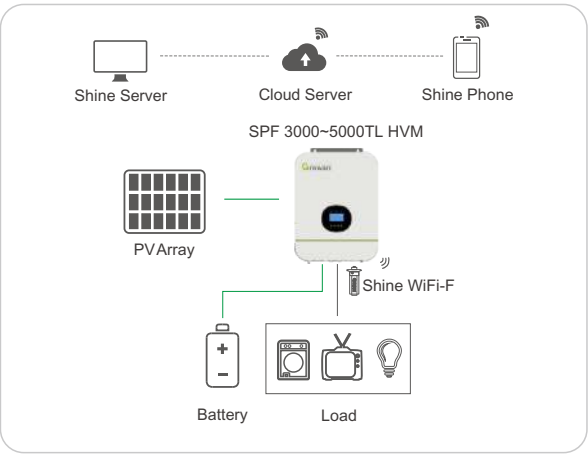
### Product Features

- Integrated MPPT Controller
- The priority of grid supply and photovoltaic power can be set
- Compatible with lead acid and lithium batteries
- Optional Wi-Fi or GPRS remote communication module
- Supports up to 6 single-phase or three-phase machines in parallel

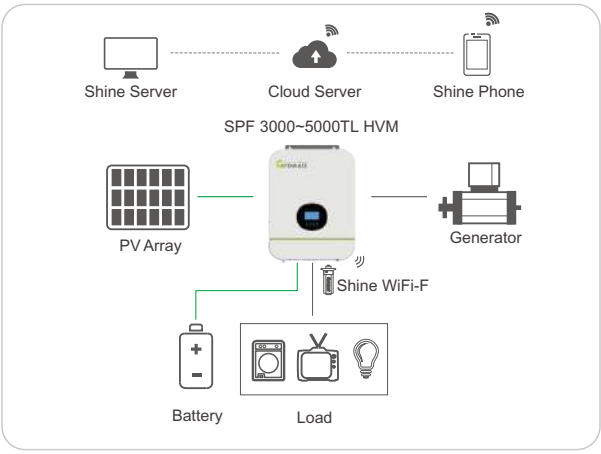
## System Diagram

### A. Single inverter basic application

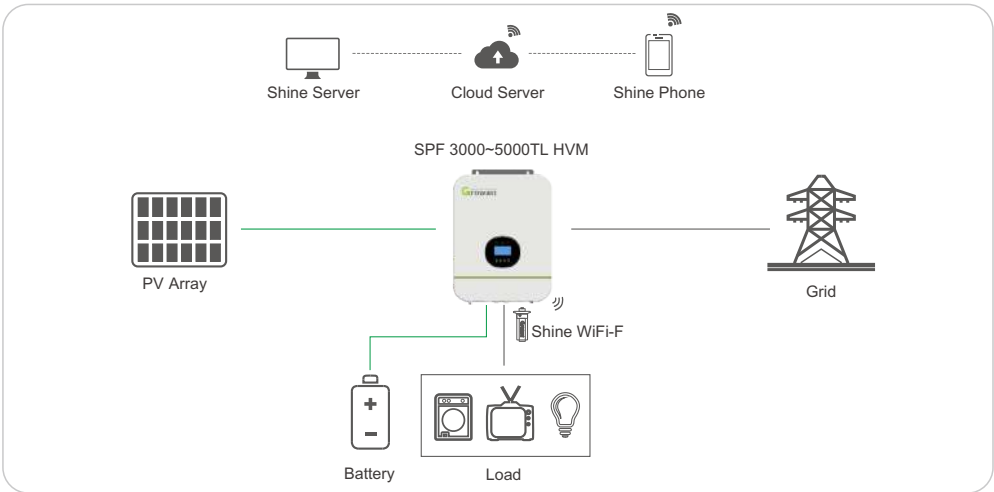
#### 01 Only PV application



#### 02 PV + generator application

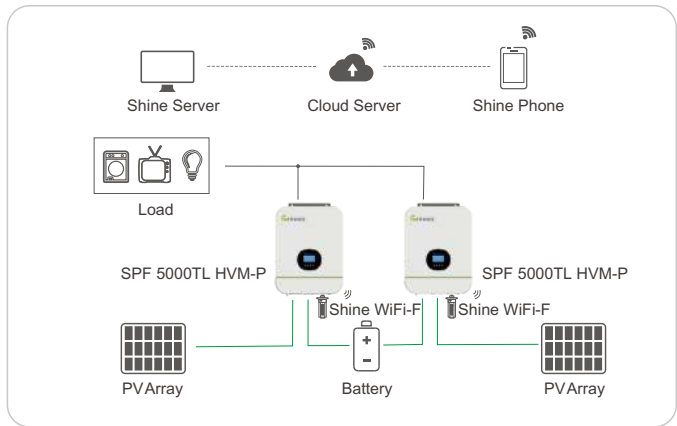


#### 03 PV + grid supply application

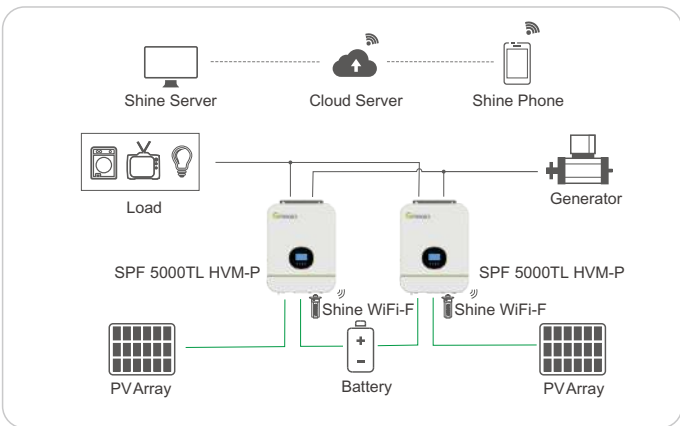


### B. Single-phase parallel application

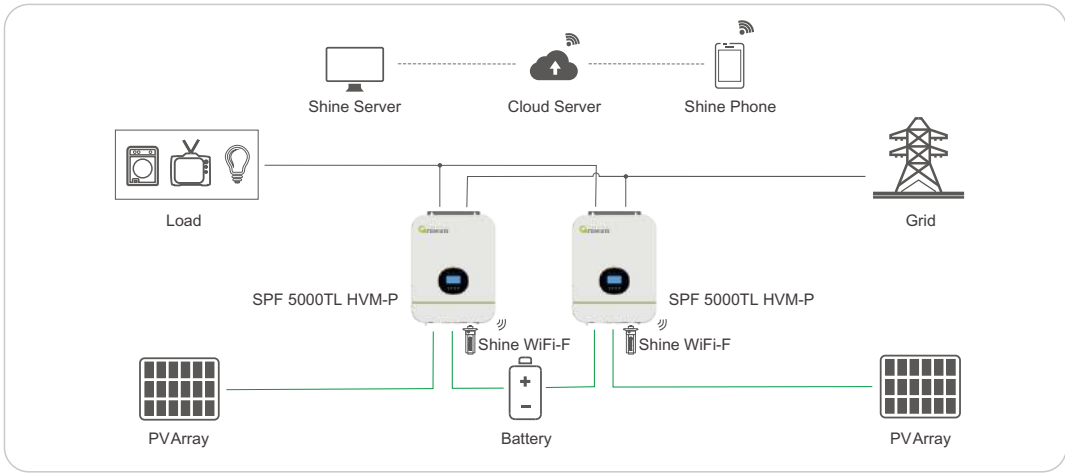
#### 01 Only PV application



#### 02 PV + generator application

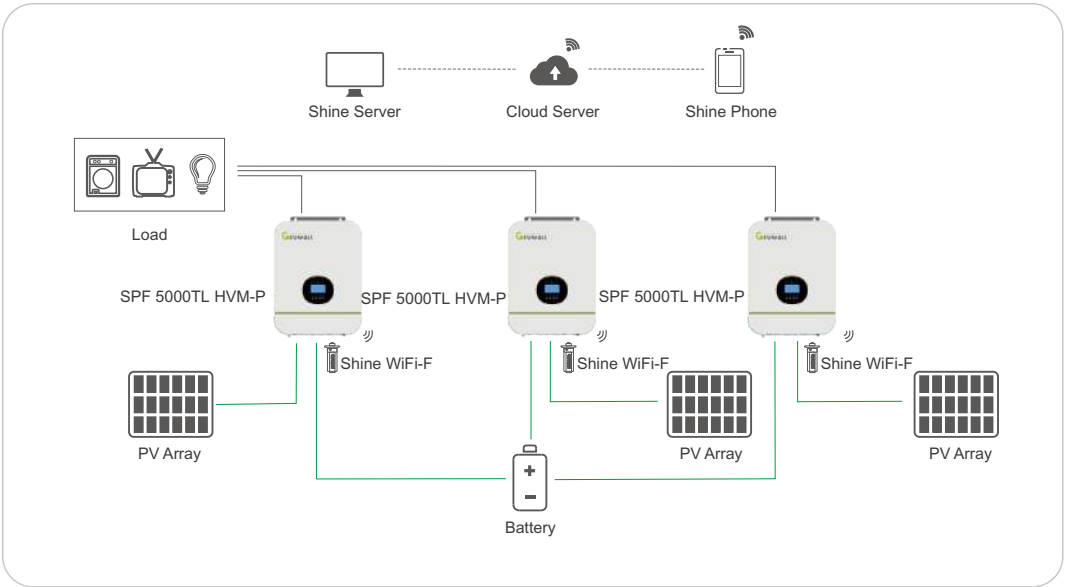


#### 03 PV + grid supply application

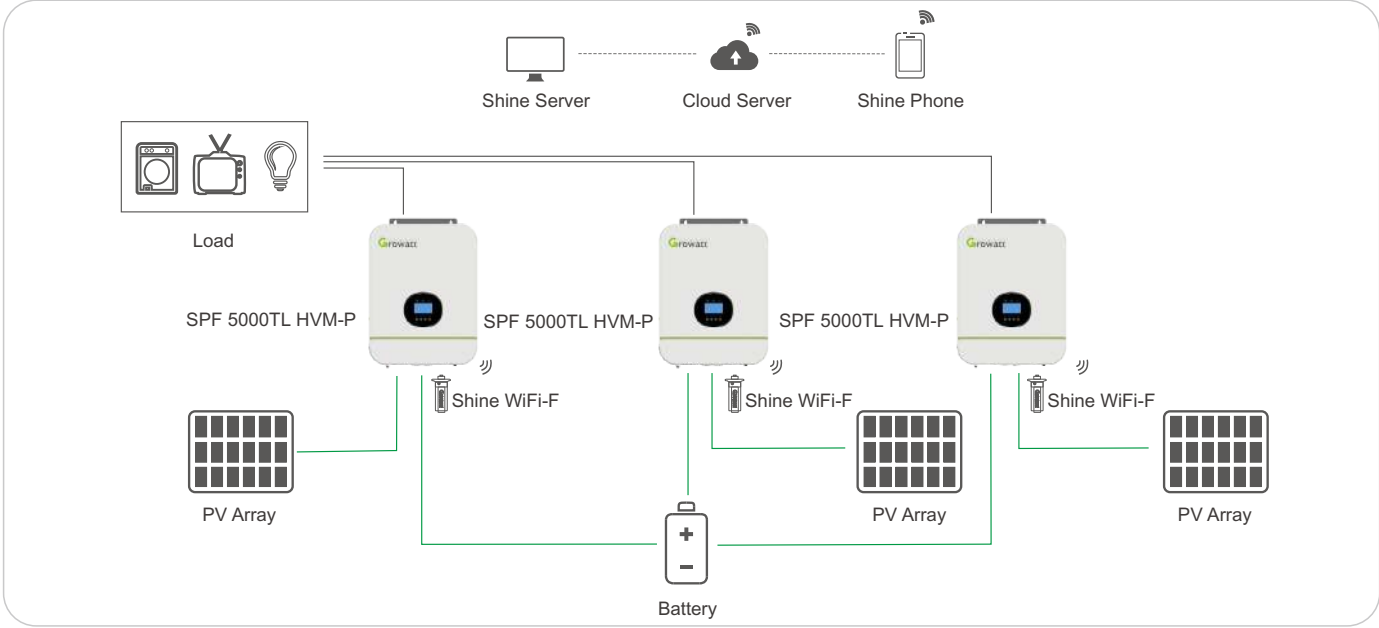


### C. Three-phase parallel application

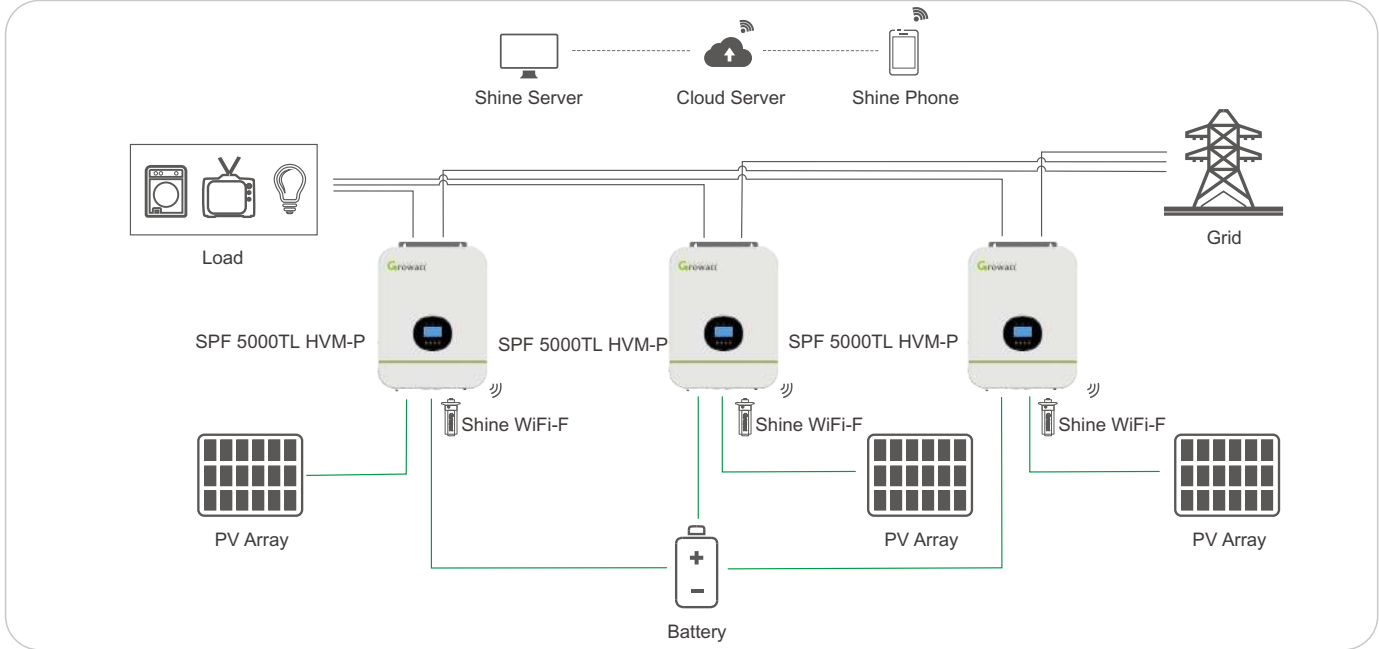
#### 01 Only PV application



02 PV application

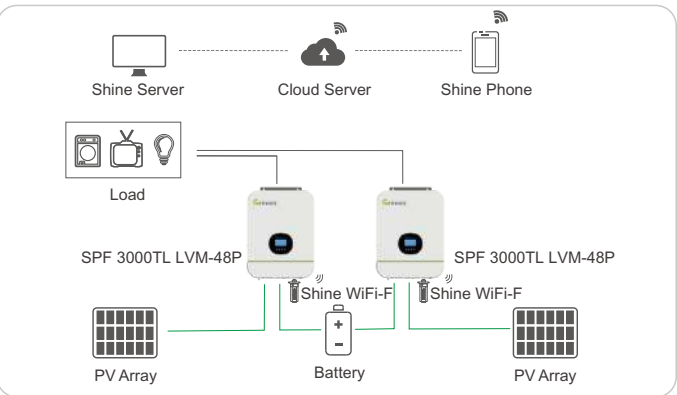


03 PV + grid supply application

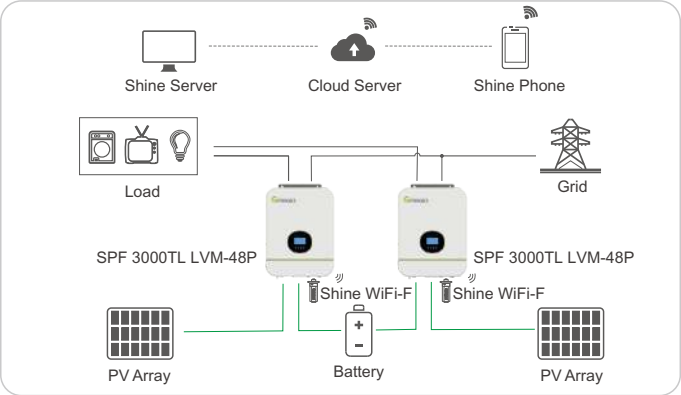


D. Split-phase parallel application (only SPF 3000TL LVM/LVM-ES)

01 Only PV application



02 PV + grid supply application



# SPF 2000~5000TL HVM

High frequency, 230Vac output



| Datasheet                                                      | SPF 2000TL<br>HVM-24                                                    | SPF 3000TL<br>HVM-24 | SPF 2000TL<br>HVM-48 | SPF 3000TL<br>HVM-48 | SPF 5000TL<br>HVM/HVM-P  |
|----------------------------------------------------------------|-------------------------------------------------------------------------|----------------------|----------------------|----------------------|--------------------------|
| Battery Voltage                                                | 24VDC                                                                   |                      | 48VDC                |                      |                          |
| Battery Type                                                   | Lead-acid                                                               |                      | Lithium/Lead-acid    |                      |                          |
| INVERTER OUTPUT                                                |                                                                         |                      |                      |                      |                          |
| Rated Power                                                    | 2000VA/ 2000W                                                           | 3000VA/ 3000W        | 2000VA/ 2000W        | 3000VA/ 3000W        | 5000VA/ 5000W            |
| Parallel Capability                                            | No                                                                      |                      |                      |                      | No/ Yes, 6 units maximum |
| AC Voltage Regulation<br>(Battery Mode)                        | 230VAC ± 5%<br>@ 50/60Hz                                                |                      |                      |                      |                          |
| Surge Power                                                    | 4000VA                                                                  | 6000VA               | 4000VA               | 6000VA               | 10000VA                  |
| Efficiency (Peak)                                              | 93%                                                                     |                      |                      |                      |                          |
| Waveform                                                       | Pure sine wave                                                          |                      |                      |                      |                          |
| Transfer Time                                                  | 10ms typical, 20ms Max                                                  |                      |                      |                      |                          |
| SOLAR CHARGER                                                  |                                                                         |                      |                      |                      |                          |
| Max. Recommended PV Power                                      | 1500W                                                                   |                      | 1800W                |                      | 4500W                    |
| MPPT Range @ Operating Voltage                                 | 30VDC ~ 80VDC                                                           |                      | 60VDC ~ 115VDC       |                      |                          |
| Maximum PV Array Open<br>Circuit Voltage                       | 102VDC                                                                  |                      | 145VDC               |                      |                          |
| Number of Independent MPP Trackers/<br>Strings Per MPP Tracker | 1/1                                                                     |                      |                      |                      |                          |
| Maximum Solar Charge Current                                   | 50A                                                                     |                      | 30A                  |                      | 80A                      |
| Maximum Efficiency                                             | 98%                                                                     |                      |                      |                      |                          |
| AC CHARGER                                                     |                                                                         |                      |                      |                      |                          |
| Charge Current                                                 | 30A                                                                     |                      | 15A                  |                      | 60A                      |
| AC Input Voltage                                               | 230 VAC                                                                 |                      |                      |                      |                          |
| Selectable Voltage Range                                       | 170-280 VAC (For Personal Computers) ; 90-280 VAC (For Home Appliances) |                      |                      |                      |                          |
| Frequency Range                                                | 50Hz/60Hz (Auto sensing)                                                |                      |                      |                      |                          |
| PHYSICAL                                                       |                                                                         |                      |                      |                      |                          |
| Protection Degree                                              | IP20                                                                    |                      |                      |                      |                          |
| Dimension (W/H/D)                                              | 315/400/130mm                                                           |                      |                      |                      | 350/455/130mm            |
| Net Weight (kgs)                                               | 8                                                                       | 8.5                  | 8                    | 8.5                  | 11.5                     |
| OPERATING ENVIRONMENT                                          |                                                                         |                      |                      |                      |                          |
| Humidity                                                       | 5% to 95% Relative Humidity(Non-condensing)                             |                      |                      |                      |                          |
| Altitude                                                       | <2000m                                                                  |                      |                      |                      |                          |
| Operating Temperature                                          | 0°C - 55°C                                                              |                      |                      |                      |                          |
| Storage Temperature                                            | -15°C - 60°C                                                            |                      |                      |                      |                          |

\* All specifications are subject to change without notice

# SPF 3000TL LVM

High frequency, 120Vac output,  
supporting split phases system



| Datasheet                                                   | SPF 3000TL LVM-24P                                                        | SPF 3000TL LVM-48P |
|-------------------------------------------------------------|---------------------------------------------------------------------------|--------------------|
| Battery Voltage                                             | 24VDC                                                                     | 48VDC              |
| Battery Type                                                | Lead-acid                                                                 | Lithium/Lead-acid  |
| INVERTER OUTPUT                                             |                                                                           |                    |
| Rated Power                                                 | 3000VA/ 3000W                                                             |                    |
| Parallel Capability                                         | Yes, 6 units maximum                                                      |                    |
| AC Voltage Regulation (Battery Mode)                        | 120VAC ± 5%<br>@ 50/60Hz                                                  |                    |
| Surge Power                                                 | 6000VA                                                                    |                    |
| Efficiency (Peak)                                           | 93%                                                                       |                    |
| Waveform                                                    | Pure sine wave                                                            |                    |
| Transfer Time                                               | 10ms typical, 20ms Max                                                    |                    |
| SOLAR CHARGER                                               |                                                                           |                    |
| Max. Recommended PV Power                                   | 2250W                                                                     | 4500W              |
| MPPT Range @ Operating Voltage                              | 30VDC ~ 115VDC                                                            | 60VDC ~ 115VDC     |
| Maximum PV Array Open Circuit Voltage                       | 145VDC                                                                    |                    |
| Number of Independent MPP Trackers/ Strings Per MPP Tracker | 1/1                                                                       |                    |
| Maximum Solar Charge Current                                | 80A                                                                       |                    |
| Maximum Efficiency                                          | 97%                                                                       |                    |
| AC CHARGER                                                  |                                                                           |                    |
| Charge Current                                              | 60A                                                                       | 40A                |
| AC Input Voltage                                            | 120 VAC                                                                   |                    |
| Selectable Voltage Range                                    | 95-140 VAC (For Personal Computers) ;<br>65-140 VAC (For Home Appliances) |                    |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                                                  |                    |
| PHYSICAL                                                    |                                                                           |                    |
| Protection Degree                                           | IP20                                                                      |                    |
| Dimension (W/H/D)                                           | 350/455/130mm                                                             |                    |
| Net Weight (kgs)                                            | 11                                                                        |                    |
| OPERATING ENVIRONMENT                                       |                                                                           |                    |
| Humidity                                                    | 5% to 95% Relative Humidity(Non-condensing)                               |                    |
| Altitude                                                    | <2000m                                                                    |                    |
| Operating Temperature                                       | 0°C - 55°C                                                                |                    |
| Storage Temperature                                         | -15°C - 60°C                                                              |                    |

\* All specifications are subject to change without notice

# Solutions

## Application scenarios of the high frequency inverter (Wide PV range)

Wide PV range series inverter is off-grid inverter for back-up power and self-consumption application , maximum PV input voltage up to 450Vdc, also it can work without battery that indirect savings in investment cost.

### Product Features (SPF 5000TL HVM-WPV)

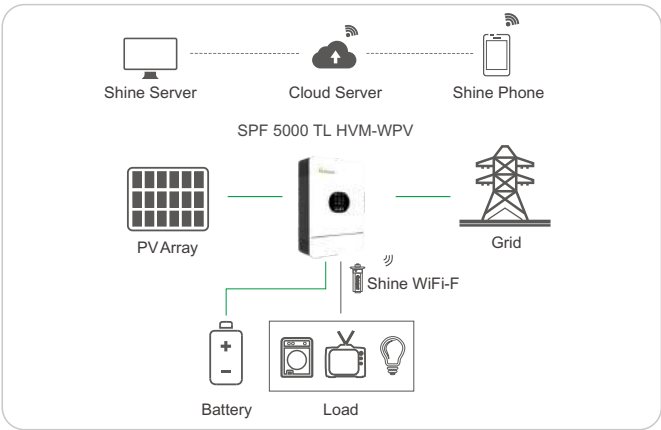
- Integrated MPPT charge controller
- Maximun PV input voltage up to 450VDC
- Configurable grid or solar input priority
- Optional WIFI/ GPRS remote monitoring
- Parallel for scalability

### Product Features (SPF 5000 ES)

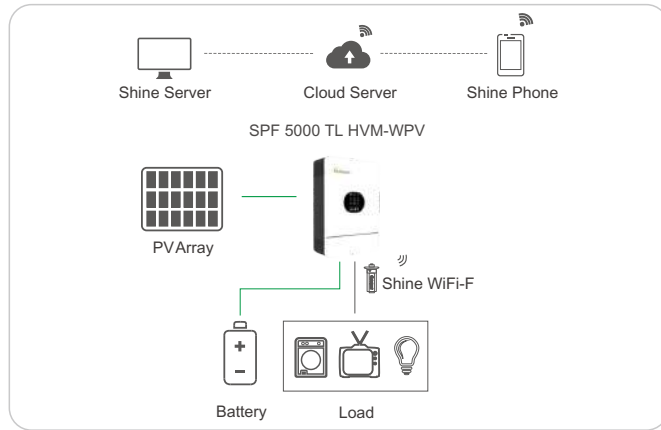
- Integrated MPPT charge controller
- It can work with battery or without battery
- Maximun PV input voltage up to 450VDC
- Configurable grid or solar input priority
- Optional WIFI/ GPRS remote monitoring
- Parallel for scalability
- Equalization charging function
- Timing charging and output function

## System Diagram

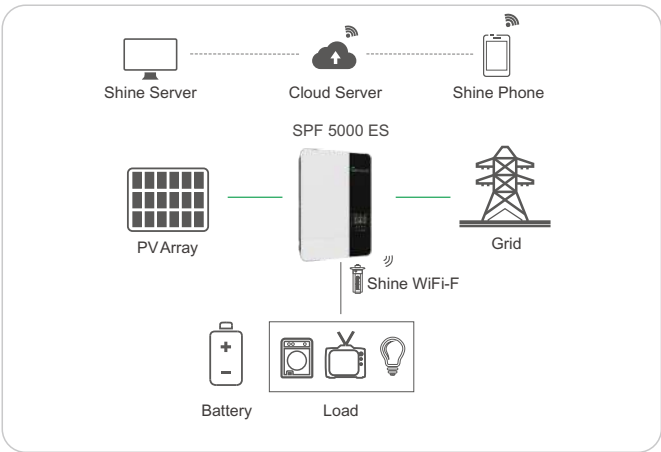
### 01 PV+ grid supply appliction



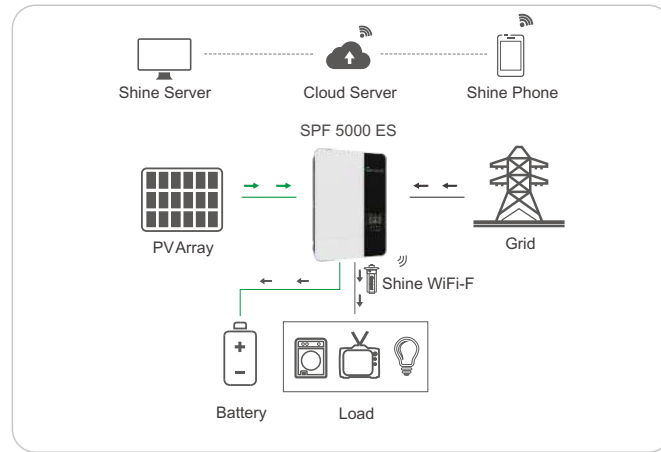
### 02 Only PV application



### 01 Without battery mode appliction



### 02 SUB mode application



# SPF 5000TL HVM-WPV

High frequency,  
wide PV input voltage, 230Vac output



| Datasheet                                                   | SPF 5000TL HVM-WPV/WPV-P                                                |
|-------------------------------------------------------------|-------------------------------------------------------------------------|
| Battery Voltage                                             | 48VDC                                                                   |
| Battery Type                                                | Lithium/Lead-acid                                                       |
| INVERTER OUTPUT                                             |                                                                         |
| Rated Power                                                 | 5000VA/ 5000W                                                           |
| Parallel Capability                                         | No/ Yes, 6 units maximum                                                |
| AC Voltage Regulation (Battery Mode)                        | 230VAC ± 5% @ 50/60Hz                                                   |
| Surge Power                                                 | 10000VA                                                                 |
| Efficiency (Peak)                                           | 93%                                                                     |
| Waveform                                                    | Pure sine wave                                                          |
| Transfer Time                                               | 10ms typical, 20ms Max                                                  |
| SOLAR CHARGER                                               |                                                                         |
| Max. Recommended PV Power                                   | 6000W                                                                   |
| MPPT Range @ Operating Voltage                              | 120VDC ~ 430VDC                                                         |
| Maximum PV Array Open Circuit Voltage                       | 450VDC                                                                  |
| Number of Independent MPP Trackers/ Strings Per MPP Tracker | 1/1                                                                     |
| Maximum Solar Charge Current                                | 100A                                                                    |
| AC CHARGER                                                  |                                                                         |
| Charge Current                                              | 80A                                                                     |
| AC Input Voltage                                            | 230 VAC                                                                 |
| Selectable Voltage Range                                    | 170-280 VAC (For Personal Computers) ; 90-280 VAC (For Home Appliances) |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                                                |
| PHYSICAL                                                    |                                                                         |
| Protection Degree                                           | IP20                                                                    |
| Dimension (W/H/D)                                           | 330/485/135mm                                                           |
| Net Weight (kgs)                                            | 12                                                                      |
| OPERATING ENVIRONMENT                                       |                                                                         |
| Humidity                                                    | 5% to 95% Relative Humidity(Non-condensing)                             |
| Altitude                                                    | <2000m                                                                  |
| Operating Temperature                                       | 0°C - 55°C                                                              |
| Storage Temperature                                         | -15°C - 60°C                                                            |
| * All specifications are subject to change without notice   |                                                                         |

# SPF 3500~5000 ES

High frequency,  
wide PV input voltage, 230Vac output



| Datasheet                                                   | SPF 3500 ES                                                             | SPF 5000 ES   |
|-------------------------------------------------------------|-------------------------------------------------------------------------|---------------|
| Battery Voltage                                             | 48VDC                                                                   |               |
| Battery Type                                                | Lithium/Lead-acid                                                       |               |
| INVERTER OUTPUT                                             |                                                                         |               |
| Rated Power                                                 | 3500VA/ 3500W                                                           | 5000VA/ 5000W |
| Parallel Capability                                         | Yes, 6 units maximum                                                    |               |
| AC Voltage Regulation (Battery Mode)                        | 230VAC ± 5% @ 50/60Hz                                                   |               |
| Surge Power                                                 | 70000VA                                                                 | 10000VA       |
| Efficiency (Peak)                                           | 93%                                                                     |               |
| Waveform                                                    | Pure sine wave                                                          |               |
| Transfer Time                                               | 10ms typical, 20ms Max                                                  |               |
| SOLAR CHARGER                                               |                                                                         |               |
| Maximum PV Array Power                                      | 4500W                                                                   | 6000W         |
| MPPT Range @ Operating Voltage                              | 120VDC ~ 430VDC                                                         |               |
| Number of Independent MPP Trackers/ Strings Per MPP Tracker | 1/1                                                                     |               |
| Maximum PV Array Open Circuit Voltage                       | 450VDC                                                                  |               |
| Maximum Solar Charge Current                                | 80A                                                                     | 100A          |
| AC CHARGER                                                  |                                                                         |               |
| Charge Current                                              | 60A                                                                     | 80A           |
| AC Input Voltage                                            | 230 VAC                                                                 |               |
| Selectable Voltage Range                                    | 170-280 VAC (For Personal Computers) ; 90-280 VAC (For Home Appliances) |               |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                                                |               |
| PHYSICAL                                                    |                                                                         |               |
| Protection Degree                                           | IP20                                                                    |               |
| Dimension (W/H/D)                                           | 330/485/135mm                                                           |               |
| Net Weight                                                  | 11.5kgs                                                                 | 12kgs         |
| OPERATING ENVIRONMENT                                       |                                                                         |               |
| Humidity                                                    | 5% to 95% Relative Humidity(Non-condensing)                             |               |
| Altitude                                                    | <2000m                                                                  |               |
| Operating Temperature                                       | 0°C - 55°C                                                              |               |
| Storage Temperature                                         | -15°C - 60°C                                                            |               |
| * All specifications are subject to change without notice   |                                                                         |               |

# SPF 3000TL LVM-ES

High frequency,  
120Vac output



| Datasheet                                                   | SPF 3000TL LVM-ES                                                    |
|-------------------------------------------------------------|----------------------------------------------------------------------|
| Battery Voltage                                             | 48VDC                                                                |
| Battery Type                                                | Lithium/Lead-acid                                                    |
| <b>INVERTER OUTPUT</b>                                      |                                                                      |
| Rated Power                                                 | 3000VA/ 3000W                                                        |
| Parallel Capability                                         | Yes, 6 units maximum                                                 |
| AC Voltage Regulation (Battery Mode)                        | 100Vac/110Vac/120Vac @ 50/60Hz                                       |
| Surge Power                                                 | 6000VA                                                               |
| Efficiency (Peak)                                           | 93%                                                                  |
| Waveform                                                    | Pure sine wave                                                       |
| Transfer Time                                               | 10ms typical, 20ms Max                                               |
| <b>SOLAR CHARGER</b>                                        |                                                                      |
| Max. Recommended PV Power                                   | 4000W                                                                |
| MPPT Range @ Operating Voltage                              | 120VDC ~ 250VDC                                                      |
| Number of Independent MPP Trackers/ Strings Per MPP Tracker | 1/1                                                                  |
| Maximum PV Array Open Circuit Voltage                       | 300VDC                                                               |
| Maximum Solar Charge Current                                | 60A                                                                  |
| Maximum Efficiency                                          | 97%                                                                  |
| <b>AC CHARGER</b>                                           |                                                                      |
| Charge Current                                              | 40A                                                                  |
| AC Input Voltage                                            | 120VAC                                                               |
| Selectable Voltage Range                                    | 95-140VAC (For Personal Computers) ; 65-140VAC (For Home Appliances) |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                                             |
| <b>PHYSICAL</b>                                             |                                                                      |
| Protection Degree                                           | IP20                                                                 |
| Dimension (W/H/D)                                           | 320/470/135mm                                                        |
| Net Weight (kgs)                                            | 12                                                                   |
| <b>OPERATING ENVIRONMENT</b>                                |                                                                      |
| Humidity                                                    | 5% to 95% Relative Humidity(Non-condensing)                          |
| Operating Temperature                                       | 0°C - 50°C                                                           |
| Storage Temperature                                         | -15°C - 60°C                                                         |

\* All specifications are subject to change without notice

## Solutions

### Application scenarios of the low frequency inverter

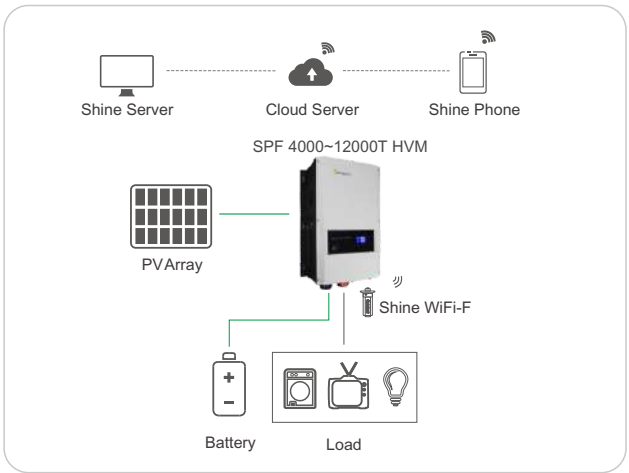
Suitable for the area with many impact loads (like motors) but without or in shortage of electricity, and areas suffering from power instability.

### Product Features

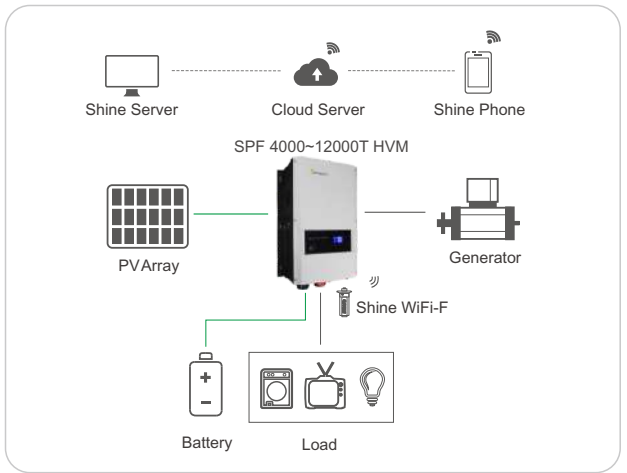
- Integrated MPPT Controller
- Built-in power frequency transformer, strong impact resistance
- The priority of grid supply and photovoltaic power can be set.
- Optional Wi-Fi or GPRS remote communication module
- Split-phase 120 V/240 V AC output (Only SPF 4000-12000T DVM)

### System Diagram

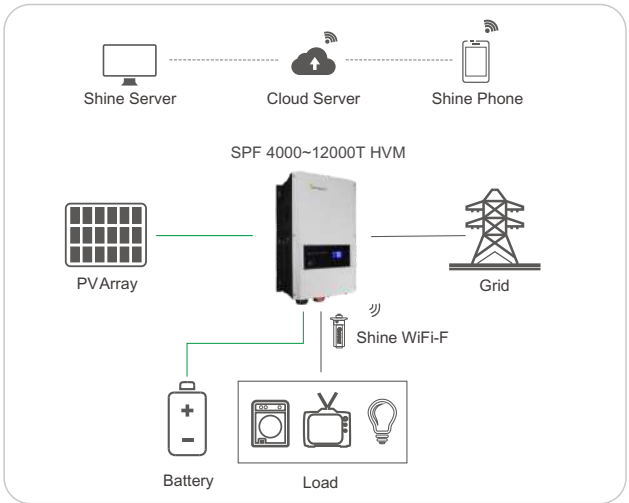
#### 01 Only PV application



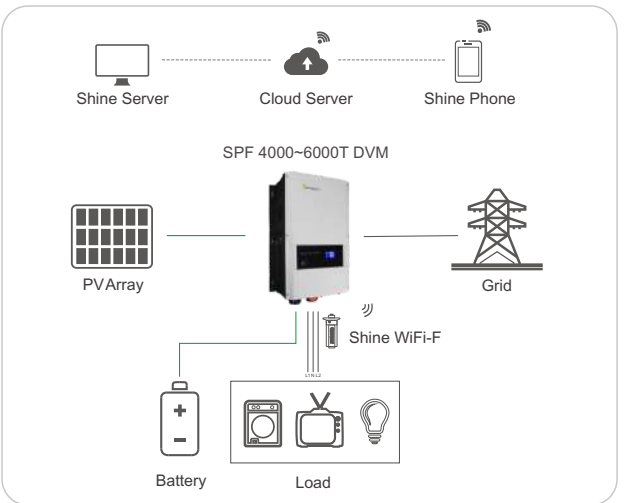
#### 02 PV + generator application



#### 03 PV + grid supply application



#### 04 Split-phase application



SPF 4000T~12000T DVM

Low frequency,  
120 V/240Vac split-phase output



| Datasheet                                                   | SPF 4000T DVM                                | SPF 5000T DVM | SPF 6000T DVM | SPF 8000T DVM | SPF 10000T DVM | SPF 12000T DVM |
|-------------------------------------------------------------|----------------------------------------------|---------------|---------------|---------------|----------------|----------------|
| Battery Voltage                                             | 48VDC                                        |               |               |               |                |                |
| Battery Type                                                | Lithium/Lead-acid                            |               |               |               |                |                |
| INVERTER OUTPUT                                             |                                              |               |               |               |                |                |
| Rated Power                                                 | 4KW                                          | 5KW           | 6KW           | 8KW           | 10KW           | 12KW           |
| Surge Rating                                                | 12KW                                         | 15KW          | 18KW          | 24KW          | 30KW           | 36KW           |
| Waveform                                                    | Pure sine wave/ same as input (bypass mode)  |               |               |               |                |                |
| Nominal Output Voltage RMS                                  | 104-110-115-120/208-220-230-240VAC(optional) |               |               |               |                |                |
| Output Frequency                                            | 50Hz/60Hz +/-0.3 Hz                          |               |               |               |                |                |
| Inverter Efficiency(Peak)                                   | >85%                                         |               |               |               |                |                |
| Transfer Time                                               | 10ms                                         |               |               |               |                |                |
| Power Factor                                                | 1.0                                          |               |               |               |                |                |
| SOLAR CHARGER                                               |                                              |               |               |               |                |                |
| Maximum PV Charge Current                                   | 80A                                          |               |               | 120A          |                |                |
| Max. Recommended PV Power                                   | 5000W                                        |               |               | 7000W         |                |                |
| Number Of Independent MPP Trackers/ Strings Per MPP Tracker | 1/1                                          |               |               | 2/1           |                |                |
| MPPT Range @ Operating Voltage(VDC)                         | 60~145VDC                                    |               |               | 60~145VDC     |                |                |
| Maximum PV Array Open Circuit Voltage                       | 150VDC                                       |               |               | 150VDC        |                |                |
| Maximum Efficiency                                          | 98%                                          |               |               | 98%           |                |                |
| AC INPUT                                                    |                                              |               |               |               |                |                |
| Voltage                                                     | 240VAC                                       |               |               |               |                |                |
| Selectable Voltage Range                                    | 184~272VAC(UPS); 154~272VAC(APL)             |               |               |               |                |                |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                     |               |               |               |                |                |
| Max. Charging Current                                       | 40A                                          | 50A           | 60A           | 70A           | 80A            | 100A           |
| MECHANICAL SPECIFICATIONS                                   |                                              |               |               |               |                |                |
| Protection Degree                                           | IP20                                         |               |               |               |                |                |
| Dimensions (W/H/D)                                          | 360/540/218mm                                | 360/540/218mm | 360/540/218mm | 380/650/225mm | 380/650/225mm  | 380/650/225mm  |
| Weight (kgs)                                                | 42                                           | 47            | 52            | 64            | 66             | 75             |
| OPERATING ENVIRONMENT                                       |                                              |               |               |               |                |                |
| Altitude                                                    | <2000m                                       |               |               |               |                |                |
| Operation Temperature Range                                 | 0°C to 50°C                                  |               |               |               |                |                |

\* All specifications are subject to change without notice

SPF 4000T~12000T HVM

Low frequency, 230Vac output



| Datasheet                                                      | SPF 4KT HVM                                    | SPF 5KT HVM | SPF 6KT HVM | SPF 8KT HVM   | SPF 10KT HVM | SPF 12KT HVM |
|----------------------------------------------------------------|------------------------------------------------|-------------|-------------|---------------|--------------|--------------|
| Battery Voltage                                                | 48VDC                                          |             |             |               |              |              |
| Battery Type                                                   | Lithium/Lead-acid                              |             |             |               |              |              |
| INVERTER OUTPUT                                                |                                                |             |             |               |              |              |
| Rated Power                                                    | 4KW                                            | 5KW         | 6KW         | 8KW           | 10KW         | 12KW         |
| Surge Rating                                                   | 12KW                                           | 15KW        | 18KW        | 24KW          | 30KW         | 36KW         |
| Waveform                                                       | Pure sine wave/ same as input(bypass mode)     |             |             |               |              |              |
| Nominal Output Voltage RMS                                     | 208V220V/230V/240VAC( +/-10% RMS)              |             |             |               |              |              |
| Output Frequency                                               | 50Hz/60Hz +/-0.3 Hz                            |             |             |               |              |              |
| Inverter Efficiency(Peak)                                      | >85%                                           |             |             |               |              |              |
| Line Mode Efficiency                                           | >95%                                           |             |             |               |              |              |
| Power Factor                                                   | 1.0                                            |             |             |               |              |              |
| Transfer Time                                                  | 10ms                                           |             |             |               |              |              |
| SOLAR CHARGER                                                  |                                                |             |             |               |              |              |
| Maximum PV Charge Current                                      | 80A                                            |             |             | 120A          |              |              |
| Max. Recommended PV Power                                      | 5000W                                          |             |             | 7000W         |              |              |
| Number Of Independent MPP Trackers/<br>Strings Per MPP Tracker | 1/1                                            |             |             | 2/1           |              |              |
| MPPT Range @ Operating Voltage(VDC)                            | 60~145VDC                                      |             |             |               |              |              |
| Maximum PV Array Open Circuit Voltage                          | 150VDC                                         |             |             |               |              |              |
| Maximum Efficiency                                             | 98%                                            |             |             |               |              |              |
| AC INPUT                                                       |                                                |             |             |               |              |              |
| Voltage                                                        | 230VAC                                         |             |             |               |              |              |
| Selectable Voltage Range                                       | 154~272VAC(for appliances);184~272VAC(for UPS) |             |             |               |              |              |
| Frequency Range                                                | 50Hz/60Hz (Auto sensing)                       |             |             |               |              |              |
| Maximum Charge Current                                         | 40A                                            | 50A         | 60A         | 70A           | 80A          | 100A         |
| MECHANICAL SPECIFICATIONS                                      |                                                |             |             |               |              |              |
| Protection Degree                                              | IP20                                           |             |             |               |              |              |
| Dimensions (W/H/D)                                             | 360/540/218mm                                  |             |             | 380/650/255mm |              |              |
| Net Weight (kgs)                                               | 38                                             | 41          | 45          | 64            | 66           | 75           |
| OPERATING ENVIRONMENT                                          |                                                |             |             |               |              |              |
| Altitude                                                       | <2000m                                         |             |             |               |              |              |
| Operation Temperature Range                                    | 0°C to 50°C                                    |             |             |               |              |              |

\* All specifications are subject to change without notice

# SPF 3000T HVM-G2

Low frequency,  
230Vac output second generation



| Datasheet                                                   | SPF 3000T HVM-G2                            |
|-------------------------------------------------------------|---------------------------------------------|
| Battery Voltage                                             | 48VDC                                       |
| Battery Type                                                | Lithium/Lead-acid                           |
| INVERTER OUTPUT                                             |                                             |
| Rated Power                                                 | 3KW                                         |
| Surge Rating                                                | 9KW                                         |
| Waveform                                                    | Pure sine wave/ same as input (bypass mode) |
| Nominal Output Voltage RMS                                  | 208-220-230-240VAC(optional)                |
| Output Frequency                                            | 50Hz/60Hz +/-0.5 Hz                         |
| Inverter Efficiency(Peak)                                   | 95%                                         |
| Transfer Time                                               | 10ms                                        |
| SOLAR CHARGER                                               |                                             |
| Maximum PV Charge Current                                   | 120A                                        |
| Max. Recommended PV Power                                   | 7000W                                       |
| Number of independent MPP trackers/ strings per MPP tracker | 2/1                                         |
| MPPT Range @ Operating Voltage(VDC)                         | 60~200VDC                                   |
| Maximum PV Array Open Circuit Voltage                       | 250V                                        |
| Maximum Efficiency                                          | 97%                                         |
| AC INPUT                                                    |                                             |
| Voltage                                                     | 230VAC                                      |
| Selectable Voltage Range                                    | 184~272VAC(UPS);154~272VAC(APL)             |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                    |
| Max. Charging Current                                       | 40A                                         |
| MECHANICAL SPECIFICATIONS                                   |                                             |
| Protection Degree                                           | IP20                                        |
| Dimensions (W/H/D)                                          | 360/540/218mm                               |
| Net Weight (kgs)                                            | 38                                          |
| OPERATING ENVIRONMENT                                       |                                             |
| Altitude                                                    | <2000W                                      |
| Operation Temperature Range                                 | 0°C to 45°C                                 |

\* All specifications are subject to change without notice

# SPF 8000~12000T DVM-MPV

Low frequency,  
120 V/240Vac split-phase output



| Datasheet                                                   | SPF 8000T DVM-MPV                            |      | SPF 10000T DVM-MPV |      | SPF 12000T DVM-MPV |  |
|-------------------------------------------------------------|----------------------------------------------|------|--------------------|------|--------------------|--|
| Battery Voltage                                             | 48VDC                                        |      |                    |      |                    |  |
| Battery Type                                                | Lithium/Lead-acid                            |      |                    |      |                    |  |
| INVERTER OUTPUT                                             |                                              |      |                    |      |                    |  |
| Rated Power                                                 | 8KW                                          | 10KW |                    | 12KW |                    |  |
| Surge Rating                                                | 24KW                                         | 30KW |                    | 36KW |                    |  |
| Waveform                                                    | Pure sine wave/ same as input (bypass mode)  |      |                    |      |                    |  |
| Nominal Output Voltage RMS                                  | 104-110-115-120/208-220-230-240VAC(optional) |      |                    |      |                    |  |
| Output Frequency                                            | 50Hz/60Hz +/-0.5 Hz                          |      |                    |      |                    |  |
| Inverter Efficiency(Peak)                                   | 88%                                          |      |                    |      |                    |  |
| Transfer Time                                               | 10ms                                         |      |                    |      |                    |  |
| SOLAR CHARGER                                               |                                              |      |                    |      |                    |  |
| Maximum PV Charge Current                                   | 120A                                         |      |                    |      |                    |  |
| Max. Recommended PV Power                                   | 7000W                                        |      |                    |      |                    |  |
| Number of independent MPP trackers/ strings per MPP tracker | 2/1                                          |      |                    |      |                    |  |
| MPPT Range @ Operating Voltage(VDC)                         | 60~245VDC                                    |      |                    |      |                    |  |
| Maximum PV Array Open Circuit Voltage                       | 250V                                         |      |                    |      |                    |  |
| Maximum Efficiency                                          | 97%                                          |      |                    |      |                    |  |
| AC INPUT                                                    |                                              |      |                    |      |                    |  |
| Voltage                                                     | 240VAC                                       |      |                    |      |                    |  |
| Selectable Voltage Range                                    | 184~272VAC(UPS); 154~272VAC(APL)             |      |                    |      |                    |  |
| Frequency Range                                             | 50Hz/60Hz (Auto sensing)                     |      |                    |      |                    |  |
| Max. Charging Current                                       | 70A                                          | 80A  |                    | 100A |                    |  |
| MECHANICAL SPECIFICATIONS                                   |                                              |      |                    |      |                    |  |
| Protection Degree                                           | IP20                                         |      |                    |      |                    |  |
| Dimensions (W/H/D)                                          | 380/650/225mm                                |      |                    |      |                    |  |
| Net Weight (kgs)                                            | 64                                           | 66   |                    | 75   |                    |  |
| OPERATING ENVIRONMENT                                       |                                              |      |                    |      |                    |  |
| Altitude                                                    | <2000W                                       |      |                    |      |                    |  |
| Operation Temperature Range                                 | 0°C to 45°C                                  |      |                    |      |                    |  |

\* All specifications are subject to change without notice

# Solutions

## Application scenarios of the MPPT controller

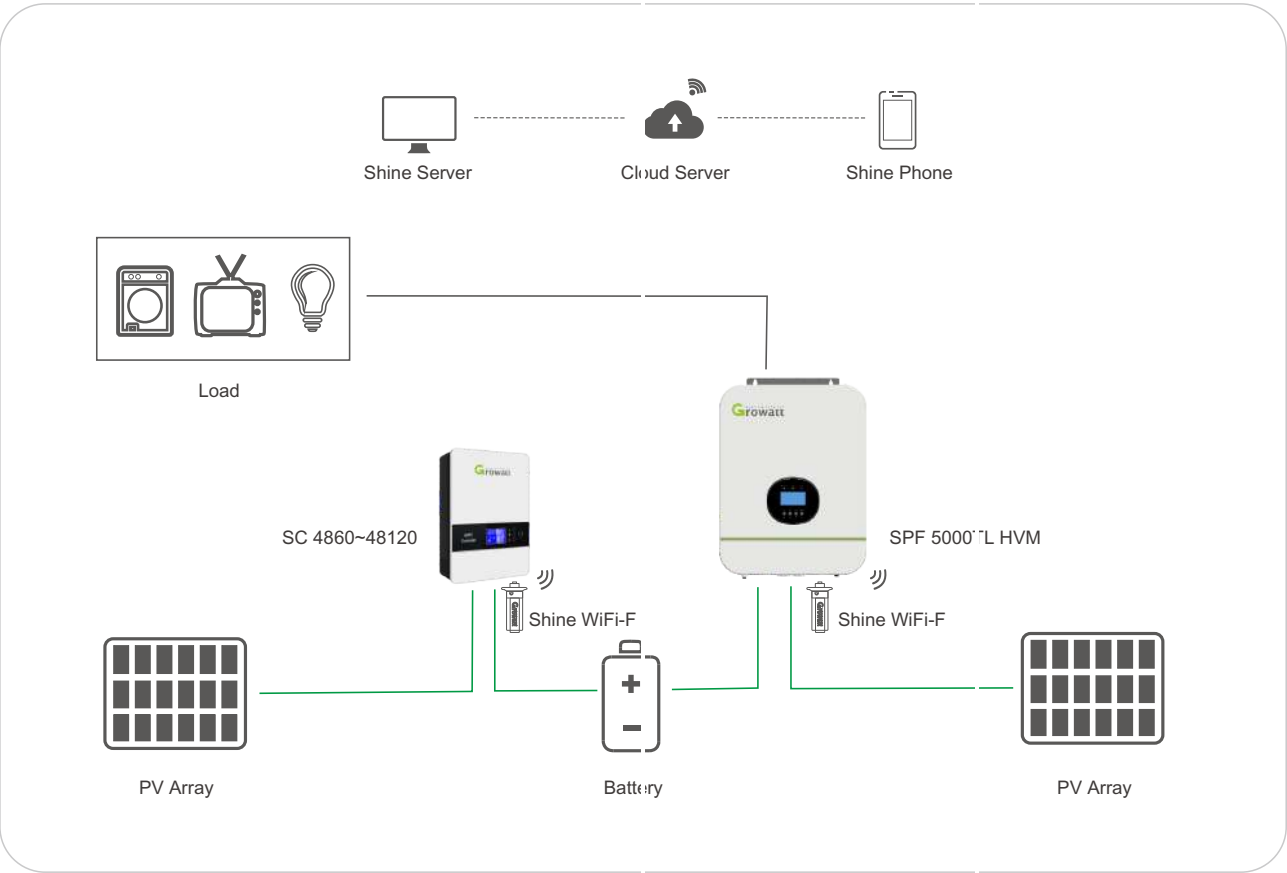
Suitable for the areas needs long backup time also without or in shortage of electricity, and areas suffering from power instability.

### Product Features

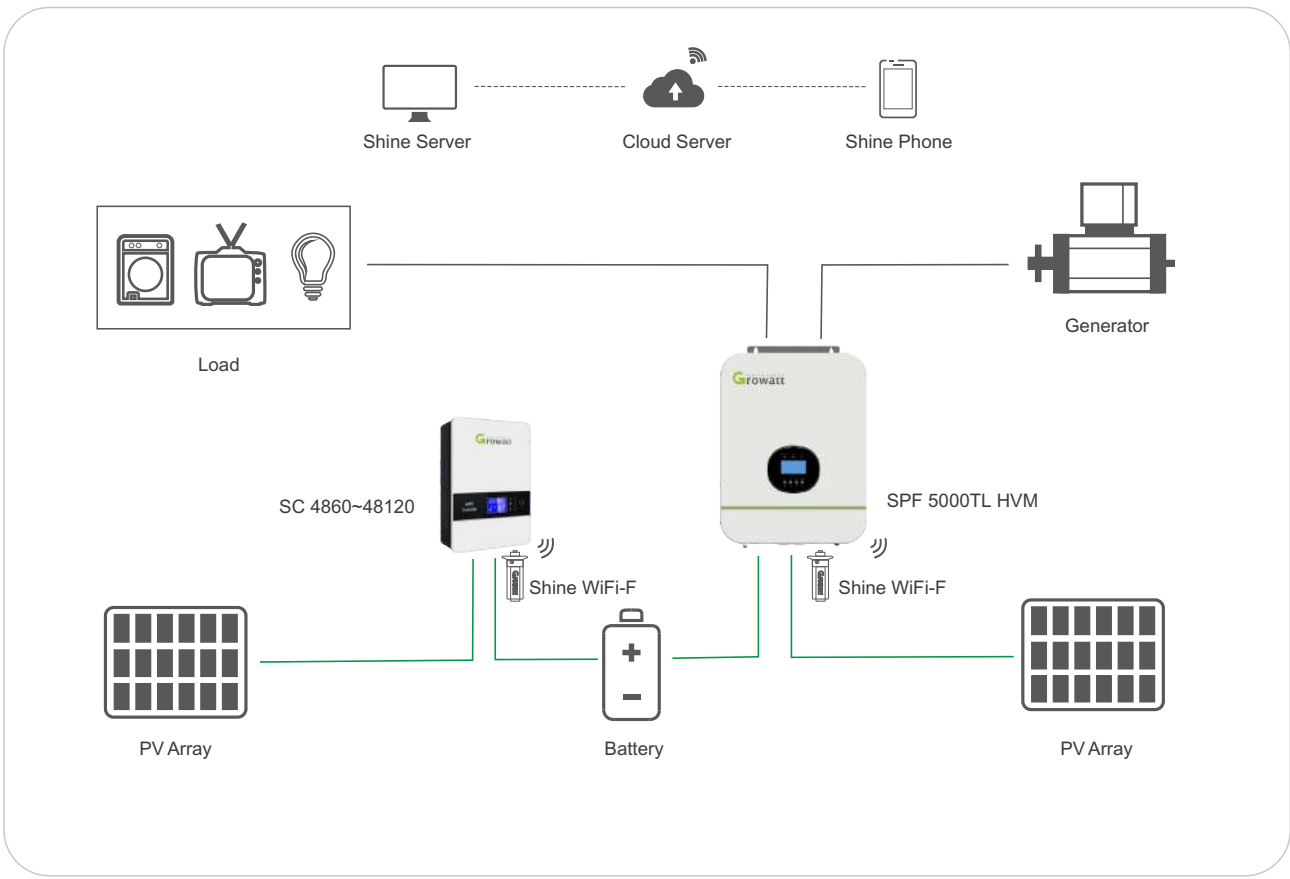
- 12 V/24 V/48 V battery voltage automatically adapted
- Compensation function for battery temperature
- Optional Wi-Fi or GPRS remote communication module

### System Diagram

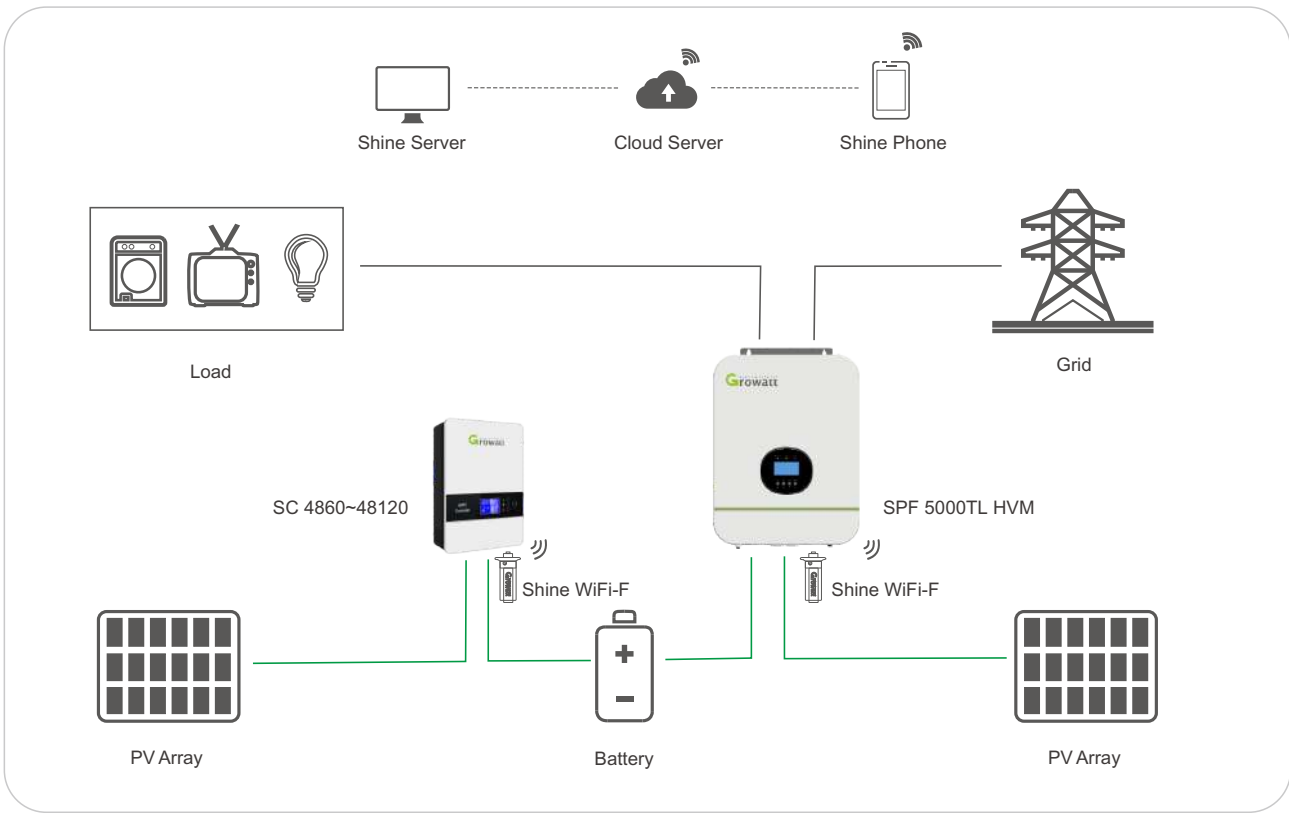
#### 01 Only PV expansion application



#### 02 PV expansion + generator



#### 03 PV expansion + grid supply



# SC 4860~48120-MPV

MPPT Controller



| Datasheet                          | SC 4860-MPV                                                 |                                     | SC 4880-MPV |                                     | SC 48100-MPV  |                                     | SC 48120-MPV |  |
|------------------------------------|-------------------------------------------------------------|-------------------------------------|-------------|-------------------------------------|---------------|-------------------------------------|--------------|--|
| Compatible Battery Nominal Voltage | 12V/24V/48V                                                 |                                     |             |                                     |               |                                     |              |  |
| ELECTRICAL                         |                                                             |                                     |             |                                     |               |                                     |              |  |
| PV OPerating Voltage               | 18~50Vdc@12V<br>34~100Vdc@24V<br>60~200Vdc@48V              |                                     |             |                                     |               |                                     |              |  |
| Max.PV Open Circuit Voltage        | 250Vdc                                                      |                                     |             |                                     |               |                                     |              |  |
| Max. Recommended PV Power          | 1000W@12V<br>2000W@24V<br>4000W@48V                         | 1250W@12V<br>2500W@24V<br>5000W@48V |             | 1500W@12V<br>3000W@24V<br>6000W@48V |               | 1750W@12V<br>3500W@24V<br>7000W@48V |              |  |
| Max.Charging Current               | 60A                                                         | 80A                                 |             | 100A                                |               | 120A                                |              |  |
| Self Consumption                   | 2W                                                          |                                     |             |                                     |               |                                     |              |  |
| MPPT Efficiency                    | 99.5%                                                       |                                     |             |                                     |               |                                     |              |  |
| Max.Efficiency                     | 97.5%                                                       |                                     |             |                                     |               |                                     |              |  |
| Protection                         | Overload,high voltage,<br>high temperature protection       |                                     |             |                                     |               |                                     |              |  |
| BATTERY CHARGING                   |                                                             |                                     |             |                                     |               |                                     |              |  |
| Battery Type                       | Lithium/Sealed: AGM, Gel, Flooded,User define               |                                     |             |                                     |               |                                     |              |  |
| Charging Algorithm                 | 3-stage: Bulk, Absorption,<br>Float, Equalize               |                                     |             |                                     |               |                                     |              |  |
| Bulk Charge Voltage                | 14.1V@12V<br>28.2V@24V<br>56.4V@48V<br>User define:48~58.4V |                                     |             |                                     |               |                                     |              |  |
| Float Charge Voltage               | 13.6V@12V<br>27.2V@24V<br>54.4V@48V<br>User define:48~58.4V |                                     |             |                                     |               |                                     |              |  |
| Temperature Compensation           | -5mV/°C with BTS(Optional)                                  |                                     |             |                                     |               |                                     |              |  |
| COMMUNICATION                      |                                                             |                                     |             |                                     |               |                                     |              |  |
| Communication Port                 | USB,BMS                                                     |                                     |             |                                     |               |                                     |              |  |
| MECHANICAL                         |                                                             |                                     |             |                                     |               |                                     |              |  |
| Net Weight (kgs)                   | 3                                                           | 3.2                                 |             | 3.9                                 |               | 4.1                                 |              |  |
| Gross Weight (kgs)                 | 3.7                                                         | 3.9                                 |             | 4.5                                 |               | 4.7                                 |              |  |
| Dimensions (W/H/D)                 | 295/180/100mm                                               |                                     |             |                                     | 320/200/105mm |                                     |              |  |
| Cooling                            | Fan cooling                                                 |                                     |             |                                     |               |                                     |              |  |
| Protection Degree                  | IP20                                                        |                                     |             |                                     |               |                                     |              |  |
| ENVIRONMENT                        |                                                             |                                     |             |                                     |               |                                     |              |  |
| Ambient Temperature                | -20~55°C(Derating from 45°C)                                |                                     |             |                                     |               |                                     |              |  |
| Storage Temperature                | -40°C~+60°C                                                 |                                     |             |                                     |               |                                     |              |  |
| Humidity                           | 100% non-condensing                                         |                                     |             |                                     |               |                                     |              |  |
| Altitude                           | <2000m                                                      |                                     |             |                                     |               |                                     |              |  |

## Solutions

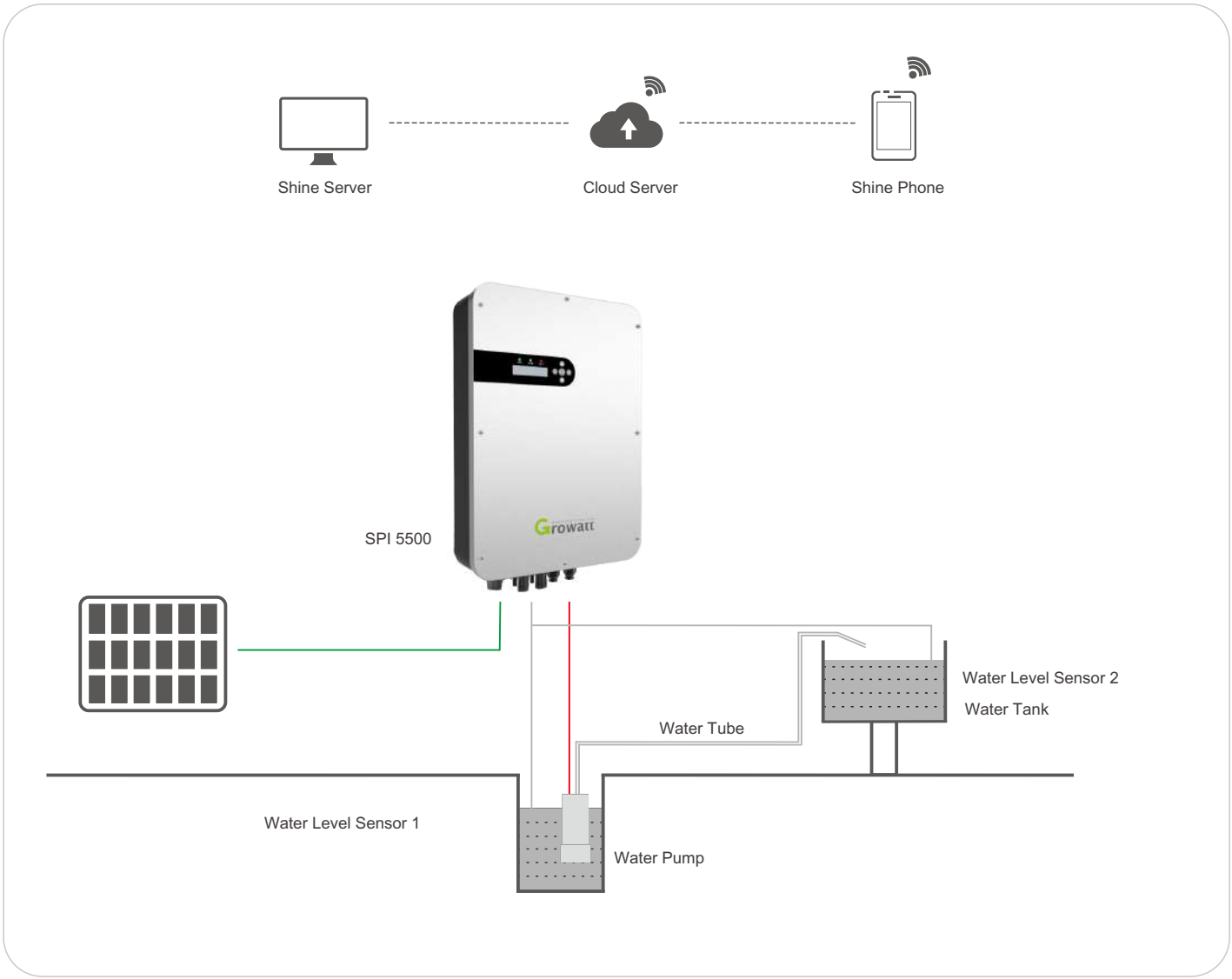
### Application scenarios of the pump inverter

Suitable for the areas using solar power to pump water.

### Product Features

- Dynamic MPPT control, MPPT efficiency up to 99%
- Ip65 design for outdoor installation
- Functions and parameters can be set via LCD
- Optional water level detection sensor
- Optional Wi-Fi or GPRS remote communication module

### System Diagram



# SPI 3000~22000

Solar Pump Inverter



| Datasheet                   | SPI 3000      | SPI 4000 | SPI 5500   | SPI 7500      | SPI 9200    | SPI 11000     | SPI 13000     | SPI 15000    | SPI 18500  | SPI 22000    |  |
|-----------------------------|---------------|----------|------------|---------------|-------------|---------------|---------------|--------------|------------|--------------|--|
| INVERTER OUTPUT             |               |          |            |               |             |               |               |              |            |              |  |
| Rated Output Power (W)      | 3000W         | 4000W    | 5500W      | 7500W         | 9200W       | 11000W        | 13000W        | 15000W       | 18500W     | 22000W       |  |
| Max. Output Current (A)     | 8A            | 10A      | 13A        | 18A           | 21A         | 24A           | 28A           | 30A          | 39A        | 45A          |  |
| Output Frequency (Hz)       | 0-50/60Hz     |          |            |               |             |               |               |              |            |              |  |
| Output Voltage (Vac)        | 3PH 380V      |          |            |               |             |               |               |              |            |              |  |
| SOLAR INPUT                 |               |          |            |               |             |               |               |              |            |              |  |
| Max. Recommended PV Power   | 3600W         | 4800W    | 6600W      | 9000W         | 11000W      | 13200W        | 15600W        | 18000W       | 22200W     | 26500W       |  |
| Recommend Pump Capacity     | 2.2KW(3HP)    | 3KW(4HP) | 3.7KW(5HP) | 5.5KW(7.5HP)  | 7.5KW(10HP) | 9.2KW(12.5HP) | 11KW(15HP)    | 13KW(17.5HP) | 15KW(20HP) | 18.5KW(25HP) |  |
| Max. DC Input Voltage (Vdc) | 900V          |          |            |               |             |               |               |              |            |              |  |
| Qty. of PV Input Ports      | 2             |          |            |               | 3           |               |               |              | 6          |              |  |
| Recommned MPP Votage (Vdc)  | 500-680V      |          |            |               |             |               |               |              |            |              |  |
| MECHANICAL SPECIFICATIONS   |               |          |            |               |             |               |               |              |            |              |  |
| Protection Degree           | IP65          |          |            |               |             |               |               |              |            |              |  |
| Weight (kgs)                | 14            |          |            | 18            |             |               | 22            |              |            |              |  |
| Demension (W/H/D)           | 340/480/155mm |          |            | 346/563/148mm |             |               | 405/533/190mm |              |            |              |  |
| OPERATING ENVIRONMENT       |               |          |            |               |             |               |               |              |            |              |  |
| Altitude                    | <2000m        |          |            |               |             |               |               |              |            |              |  |
| Operation Temperature Range | -25°C to 60°C |          |            |               |             |               |               |              |            |              |  |

\* All specifications are subject to change without notice

# SPI 7500~11000TL3-G2

Solar Pump Grid-tied Inverter



| Datasheet                          | SPI 7500TL3-G2     |        | SPI 9200TL3-G2 | SPI 11000TL3-G2 |
|------------------------------------|--------------------|--------|----------------|-----------------|
| PV INPUT                           |                    |        |                |                 |
| Max Input String Number            | 3                  |        |                |                 |
| Start Voltage(vdc)                 | 250Vdc             |        |                |                 |
| Number Of Independent Mpp Trackers | 1                  |        |                |                 |
| Max. Recommended PV Power          | 9000W              | 11000W | 13000W         |                 |
| Max Dc Input Voltage (vdc)         | 900Vdc             |        |                |                 |
| ON-GRID FEATURES                   |                    |        |                |                 |
| Rated Output Power(w)              | 8000W              | 9000W  | 11000W         |                 |
| Max. Output Current(a)             | 13.3A              | 15A    | 18.3A          |                 |
| Ac Nominal Voltage(vac)            | 230/400Vac         |        |                |                 |
| Ac Grid Frequency                  | 50/60HZ±5HZ        |        |                |                 |
| Thdi                               | <3%                |        |                |                 |
| Max. Efficiency                    | 98.3%              | 98.4%  | 98.4%          |                 |
| PUMP FEATURES                      |                    |        |                |                 |
| Recomm Mppt Voltage Range (vdc)    | 500-680Vdc         |        |                |                 |
| Rated Output Power(w)              | 7500W              | 9200W  | 11000W         |                 |
| Max Output Current(a)              | 18A                | 21A    | 24A            |                 |
| Max. Efficiency                    | 98%                |        |                |                 |
| Ouput Voltage(vac)                 | 380Vac             |        |                |                 |
| Output Frequency (hz)              | 0-50/60Hz          |        |                |                 |
| GENERAL DATA                       |                    |        |                |                 |
| Cooling                            | Natural convection |        |                |                 |
| Protection Level                   | IP65               |        |                |                 |

\* All specifications are subject to change without notice

# SPI 750~4000TL

Solar Pump Inverter



| Datasheet                          | SPI 750TL              | SPI 1500TL    | SPI 2200TL    | SPI 4000TL    |
|------------------------------------|------------------------|---------------|---------------|---------------|
| INPUT DATA (DC)                    |                        |               |               |               |
| Max. PV Power                      | 1000W                  | 2100W         | 3100W         | 5500W         |
| Max. DC Voltage                    | 450V                   |               |               |               |
| Start Voltage                      | 80V                    |               |               |               |
| MPP Voltage Range                  | 100-400V               |               |               |               |
| No. of MPP Trackers                | 1                      |               |               |               |
| No. of Pv Strings Per Mpp Tracker  | 1                      | 1             | 1             | 2             |
| Max. Input Current Per Mpp Tracker | 9A                     | 12A           | 12A           | 20A           |
| INPUT DATA (AC)                    |                        |               |               |               |
| Nominal AC Voltage                 | 220~240V(-15%~+10%)    |               |               |               |
| Rated Input Current                | 9.5A                   | 16A           | 24A           | 38A           |
| AC Grid Frequency                  | 47~63Hz                |               |               |               |
| AC Connection                      | L,N,PE                 |               |               |               |
| OUTPUT DATA (AC)                   |                        |               |               |               |
| AC Nominal Power                   | 750W                   | 1500W         | 2200W         | 4000W         |
| Rated Output Current               | 5.1A                   | 10.2A         | 14A           | 25A           |
| Nominal AC Voltage Range           | 0~220Vac               |               |               |               |
| AC Frequency                       | 0-50/60 Hz             |               |               |               |
| AC Connection                      | 1P2L                   |               |               |               |
| PERFORMANCE                        |                        |               |               |               |
| Control Mode                       | V/F                    |               |               |               |
| Type of Motor                      | Asynchronous machine   |               |               |               |
| Pump capacity                      | 550W                   | 750W          | 1500W         | 3000W         |
| GENERAL DATA                       |                        |               |               |               |
| Dimensions (W / H / D)             | 335/370/135mm          | 335/370/135mm | 335/370/135mm | 365/450/150mm |
| Weight                             | 9.5kg                  | 9.5kg         | 9.5kg         | 16.5kg        |
| Operating Temperature Range        | -25°C ... +60°C        |               |               |               |
| Cooling                            | Natural convection     |               |               |               |
| Protection Degree                  | IP65                   |               |               |               |
| Relative Humidity                  | 0-100%                 |               |               |               |
| Altitude                           | 2000m without derating |               |               |               |
| DC Connection                      | H4/MC4(Optional)       |               |               |               |
| AC Connection                      | Connector              |               |               |               |
| Display                            | LCD                    |               |               |               |
| Interfaces: Wi-Fi/ GPRS            | Optional               |               |               |               |

# SPI 750~4000TL3-LV

Solar Pump Inverter



| Datasheet                          | SPI 750TL3-LV          | SPI 1500TL3-LV | SPI 2200TL3-LV | SPI 4000TL3-LV |
|------------------------------------|------------------------|----------------|----------------|----------------|
| INPUT DATA (DC)                    |                        |                |                |                |
| Max. PV Power                      | 1000W                  | 2100W          | 3100W          | 5500W          |
| Max. DC Voltage                    | 450V                   |                |                |                |
| Start Voltage                      | 100V                   |                |                |                |
| MPP Voltage Range                  | 100-400V               |                |                |                |
| No. of MPP Trackers                | 1                      |                |                |                |
| No. of Pv Strings Per Mpp Tracker  | 1                      | 1              | 1              | 2              |
| Max. Input Current Per Mpp Tracker | 9A                     | 12A            | 12A            | 20A            |
| INPUT DATA (AC)                    |                        |                |                |                |
| Nominal AC Voltage                 | 220~240V(-15%~+10%)    |                |                |                |
| Rated Input Current                | 9.5A                   | 16A            | 24A            | 38A            |
| AC Grid Frequency                  | 47~63Hz                |                |                |                |
| AC Connection                      | L,N,PE                 |                |                |                |
| OUTPUT DATA (AC)                   |                        |                |                |                |
| AC Nominal Power                   | 750W                   | 1500W          | 2200W          | 4000W          |
| Rated Output Current               | 4.2A                   | 7.5A           | 10A            | 16A            |
| Nominal AC Voltage Range           | 0~220Vac               |                |                |                |
| AC Frequency                       | 0-50/60 Hz             |                |                |                |
| AC Connection                      | 3P3L                   |                |                |                |
| PERFORMANCE                        |                        |                |                |                |
| Control Mode                       | V/F                    |                |                |                |
| Type of Motor                      | Asynchronous machine   |                |                |                |
| Pump capacity                      | 550W                   | 750W           | 1500W          | 3000W          |
| GENERAL DATA                       |                        |                |                |                |
| Dimensions (W / H / D)             | 335/370/135mm          | 335/370/135mm  | 335/370/135mm  | 365/450/150mm  |
| Weight                             | 9.5kg                  | 9.5kg          | 9.5kg          | 16.5kg         |
| Operating Temperature Range        | -25°C ... +60°C        |                |                |                |
| Cooling                            | Natural convection     |                |                |                |
| Protection Degree                  | IP65                   |                |                |                |
| Relative Humidity                  | 0-100%                 |                |                |                |
| Altitude                           | 2000m without derating |                |                |                |
| DC Connection                      | H4/MC4(Optional)       |                |                |                |
| AC Connection                      | Connector              |                |                |                |
| Display                            | LCD                    |                |                |                |
| Interfaces: Wi-Fi/ GPRS            | Optional               |                |                |                |

Hope 3.3L-C1

3.3 kWh lithium battery module



| Datasheet                 |  | Hope 3.3L-C1           |  |
|---------------------------|--|------------------------|--|
| Battery Data              |  |                        |  |
| Nominal Voltage           |  | 51.2V                  |  |
| Normal Capacity           |  | 3.3kWh                 |  |
| Usable Capacity           |  | 3kWh                   |  |
| Operating Voltage         |  | 48 ~ 57.6V             |  |
| Rated Charging Current    |  | 32A                    |  |
| Rated Discharging Current |  | 42.5A                  |  |
| Max. Discharging Power    |  | 3kW                    |  |
| Peak Discharging Power    |  | 4.3kW/5s               |  |
| Max Charging Power        |  | 1.5KW                  |  |
| General Data              |  |                        |  |
| Dimension (W/D/H)         |  | 445/131/400mm          |  |
| Weight                    |  | 29Kg                   |  |
| IP Protection             |  | IP20                   |  |
| Working Temperature       |  | -10°C ~ +55°C          |  |
| Storage Temperature       |  | -20°C ~ +45°C          |  |
| Features                  |  |                        |  |
| DOD                       |  | 93%                    |  |
| Cycle Life                |  | > 3500 (25°C, 60% SOH) |  |
| Parallel Connection       |  | Max. 6packs            |  |
| Communication Port        |  | CAN2.0 / RS485         |  |
| Warranty                  |  | 5 Years                |  |
| IEC62619 , CE , UN38.3    |  |                        |  |

ARK LV Battery System

2.5 kWh lithium battery module



| Datasheet                                  | ARK 2.5L                                                                                   | ARK 5.1L      | ARK 7.6L      | ARK 10.2L     | ARK 12.8L     | ARK 15.3L      | ARK 17.9L      | ARK 20.4L      | ARK 23.0L      |
|--------------------------------------------|--------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|----------------|
| Battery Module                             | ARK 2.5L-A1 (2.56kWh, 51.2V, 30kg)                                                         |               |               |               |               |                |                |                |                |
| Number of Modules                          | 1                                                                                          | 2             | 3             | 4             | 5             | 6              | 7              | 8              | 9              |
| Energy Capacity                            | 2.56kWh                                                                                    | 5.12kWh       | 7.68kWh       | 10.24kWh      | 12.8kWh       | 15.35kWh       | 17.92kWh       | 20.48kWh       | 23.04kWh       |
| Dimension (W/D/H)                          | 650/260/170mm                                                                              | 650/260/340mm | 650/260/510mm | 650/260/680mm | 650/260/850mm | 650/260/1020mm | 650/260/1190mm | 650/260/1360mm | 650/260/1530mm |
| Weight                                     | 30kg                                                                                       | 60kg          | 90kg          | 120kg         | 150kg         | 180kg          | 210kg          | 240kg          | 270kg          |
| Max Charge/Discharge Current               | 25A                                                                                        | 50A           | 75A           | 100A          | 120A          | 120A           | 120A           | 120A           | 120A           |
| General                                    |                                                                                            |               |               |               |               |                |                |                |                |
| Battery Type                               | Cobalt Free Lithium Iron Phosphate (LFP)                                                   |               |               |               |               |                |                |                |                |
| Nominal Voltage                            | 51.2V                                                                                      |               |               |               |               |                |                |                |                |
| Operating voltage Range                    | 47.2 - 56.8V                                                                               |               |               |               |               |                |                |                |                |
| IP Protection                              | IP65                                                                                       |               |               |               |               |                |                |                |                |
| Installation                               | Wall-mounted or *Floor installation                                                        |               |               |               |               |                |                |                |                |
| Operation Temperature                      | -10~45°C                                                                                   |               |               |               |               |                |                |                |                |
| Features                                   |                                                                                            |               |               |               |               |                |                |                |                |
| DoD                                        | 90%                                                                                        |               |               |               |               |                |                |                |                |
| Cycle Life                                 | > 6000                                                                                     |               |               |               |               |                |                |                |                |
| BMS Monitoring Parameters                  | SOC, System voltage, current, cell voltage, cell temperature, PCBA temperature measurement |               |               |               |               |                |                |                |                |
| Communication Port                         | CAN/RS485                                                                                  |               |               |               |               |                |                |                |                |
| Warranty                                   | 10 Years                                                                                   |               |               |               |               |                |                |                |                |
| IEC62619 (Cell&Pack), CE, CEC, RCM, UN38.3 |                                                                                            |               |               |               |               |                |                |                |                |

\*Floor installation requires extra base (W/D/H=650/260/110 mm)

Shine WiFi-F

Monitoring devices



| Datasheet                    | WiFi-F                                                                    |
|------------------------------|---------------------------------------------------------------------------|
| GENERAL DATA                 |                                                                           |
| Dimensions(W/H/D)            | 79/135/29mm                                                               |
| Weight                       | 63g                                                                       |
| Manual Language              | English, Chinese                                                          |
| WIRELESS PARAMETERS          |                                                                           |
| Wireless Type                | WiFi                                                                      |
| Wireless Standard            | 802.11 b/g/n                                                              |
| Transmit Power               | 802.11b: +20dBm(Max.);<br>802.11g: +18dBm(Max.);<br>802.11n: +15dBm(Max.) |
| Receiver Sensitivity         | 802.11b: -89dBm(Max.);<br>802.11g: -81dBm(Max.);<br>802.11n: -71dBm(Max.) |
| HARDWARE PARAMETERS          |                                                                           |
| Data Interface               | UART: 9600bps; Ethernet: 100Mbps                                          |
| Operating Voltage            | 5V (+/-15%)                                                               |
| Operating Current            | 1A                                                                        |
| Operating Temperature        | -20°C~+65°C                                                               |
| Storage Temperature          | -40°C~+70°C                                                               |
| Network Type                 | AP (Access Point); station mode (with soft AP)                            |
| Security Mechanisms          | WEP / WPA-PSK / WPA2-PSK                                                  |
| Encryption                   | WEP64 / WEP128 / TKIP / AES                                               |
| APPLICATION ON PARAMETERS    |                                                                           |
| Supported Servers            | ShineServer                                                               |
| Inverter Communication       | USB A-type                                                                |
| Sever Communication          | WiFi via router (Modbus TCP protocol)                                     |
| Supported Routers            | Wireless router (Include 3G router)                                       |
| User Configuration Interface | Wireless web server (Internet Browser)                                    |
| Max. Communication Range     | 100m                                                                      |
| Data Transfer Interval       | 5 minutes                                                                 |
| Default Server URL           | server-cn.growatt.com                                                     |

# Shine GPRS-F

Monitoring devices



| Datasheet                          | GPRS-F                              |
|------------------------------------|-------------------------------------|
| GENERAL DATA                       |                                     |
| Dimensions (W/H/D)                 | 79/135/29mm                         |
| Weight                             | 70g                                 |
| Language                           | English, Chinese                    |
| WIRELESS PARAMETERS                |                                     |
| Wireless Type                      | GPRS                                |
| GRM / GPRS /EDGE Frequency Range   | 850/900/1800/1900 MHz               |
| Antenna Gain                       | 3dbi                                |
| Max. Output Power: GSM850 / GRM900 | 2W; DCS1800/PCS1900:1W              |
| Speed                              | Max. 85.6Kbps(DL); Max 42.8Kbps(UL) |
| HARDWARE PARAMETERS                |                                     |
| Serial Port Speed                  | 9600bps                             |
| Operating Voltage                  | 5V(+/-15%)                          |
| Operating Current                  | 1A                                  |
| Operating Temperature              | -30°C ... +65°C                     |
| Storage Temperature                | -40°C ... +70°C                     |
| APPLICATION PARAMETERS             |                                     |
| Servers                            | ShineServer                         |
| Communication With Inverter        | USB A-type                          |
| Communication With Server          | TCP(Modbus TCP protocol)            |
| Network Supported                  | 2G GSM(GPRS)                        |
| Configuration Interface            | APP                                 |
| SIM Type                           | Regular SIM card                    |
| Uploading Interva                  | 5 Mins(1-15 adjustable)             |
| Default Server IP                  | server-cn.growatt.com               |

## EXCEPT THE STRENGTHS OF PRODUCT WITH GROWATT, YOU CAN ALSO ENJOY

### Powerful Monitoring Platform

ShineServer and ShinePhone are the new generation monitoring systems developed by Growatt and freely open to our users.



ShineServer



ShinePhone



### Powerful cloud server

- User data security
- Up to 10 years user data storage
- Continues data upload even local network outage

### Managing wherever you are and whatever you want

- Mobile APP platform
- Working mode adjustable
- Inverter parameters are adjustable

### Smart Online Service System (OSS)



OSS platform



APP platform

Growatt Online Smart Service (OSS in short) system is a smart customer service platform, which can offer a quick support for service, lowering service costs for both Growatt installers and distributors. With the help of Growatt OSS, service engineers almost can handle 60%+ problems by remote configuration and FW updating without on-site service.

# OFF-GRID ENERGY STORAGE SYSTEM

► 15KW Three phase system    ► South Africa    ► SPF 5000TL HVM-P



► 15KW Three phase system    ► China    ► SPF 5000TL HVM-P

► 5KW Single phase Lithiem battery  
► Nigeria  
► SPF 5000TL HVM



# OFF GRID SYSTEM

► 15kW    ► South Africa    ► SPF 5000 HVM-P



► 30kW  
► South Africa  
► SPF 5000TL HVM-P



# OFF-GRID ENERGY STORAGE SYSTEM

► 20KW Three phase system    ► Zimbabwe    ► SPF 5000TL HVM-P



► 20KW  
► Argentina  
► SPF 5000 TL HVM-P



# OFF GRID SYSTEM

► 15KW    ► Nigeria    ► SPF 5000 TL HVM-P



▲ 15KW    ▲ South Africa

◀ 15KW  
◀ China  
◀ SPF 5000 TL HVM-P