



Growatt three-phase battery ready hybrid inverter, can be used as a normal PV inverter, and add high voltage battery later to update to storage system. Maximize your solar system self-consumption and reduce your electricity bill, as well as increase your energy independence.

## Leading - edge Technology

### User-friendly

- ▶ Local graphic LCD and 4 buttons, easier operation
- ▶ Compact design for easy installation
- ▶ Local USB for firmware update

### Reliable

- ▶ Nature cooling, IP65 protection rating
- ▶ Work as back-up when blackout
- ▶ Remote service along with system operation

### Flexible

- ▶ 3-Phase Battery Ready solution
- ▶ Three work modes programmable
- ▶ Compatible with high voltage batteries

## Datasheet

### SPH4000TL3 BH    SPH5000TL3 BH    SPH6000TL3 BH    SPH7000TL3 BH    SPH8000TL3 BH    SPH10000TL3 BH

#### Input data

Max. recommended PV power (for module STC)	5200W	6500W	7800W	9100W	10400W	13000W
Max. DC voltage	1000V	1000V	1000V	1000V	1000V	1000V
Start Voltage	160V	160V	160V	160V	160V	160V
MPP voltage range / normal voltage	160V-1000V / 600V	160V-1000V / 600V	160V-1000V / 600V	160V-1000V / 600V	160V-1000V / 600V	160V-1000V / 60V
MPP voltage range at full power	200-850V	250-850V	300-850V	350-850V	400-850V	500-850V
Max. input current per string	12A/12A	12A/12A	12A/12A	12A/12A	12A/12A	12A/12A
Number of MPP trackers/ strings per MPP tracker	2/1	2/1	2/1	2/1	2/1	2/1

#### AC Output Data (On-grid)

Rated AC output power	4000W	5000W	6000W	7000W	8000W	10000W
Max. AC apparent power	4000VA	5000VA	6000VA	7000VA	8000VA	10000VA
Max. output current	6A	7.5A	9A	11A	12A	15A
AC nominal voltage	230V/400V	230V/400V	230V/400V	230V/400V	230V/400V	230V/400V
AC grid frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Power factor	0.8leading -0.8lagging	0.8leading -0.8lagging	0.8leading -0.8lagging	0.8leading -0.8lagging	0.8leading -0.8lagging	0.8leading -0.8lagging
THDi	<3%	<3%	<3%	<3%	<3%	<3%
AC grid connection type	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE

#### AC Output Data ( Back-up)

Max. AC output power	4000W	5000W	6000W	6000W	6000W	6000W
Rated AC output voltage	230V/400V	230V/400V	230V/400V	230V/400V	230V/400V	230V/400V
Rated AC output frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
THDv	<3%	<3%	<3%	<3%	<3%	<3%
Switch time	0.5S	0.5S	0.5S	0.5S	0.5S	0.5S

#### Battery data(DC)

Battery voltage range	160~550V	160~550V	160~550V	160~550V	160~550V	160~550V
Max charging voltage	550V	550V	550V	550V	550V	550V
Recommended battery voltage	200V	250V	300V	350V	400V	500V
Max charging and discharging current	20A	20A	20A	20A	20A	20A
Max charging and discharging power	4000W	5000W	6000W	7000W	8000W	10000W
Type of battery	Lithium / Lead-acid	Lithium / Lead-acid	Lithium / Lead-acid	Lithium / Lead-acid	Lithium / Lead-acid	Lithium / Lead-acid
Deep of discharging	80%DOD / 50%DOD	80%DOD / 50%DOD	80%DOD / 50%DOD	80%DOD / 50%DOD	80%DOD / 50%DOD	80%DOD / 50%DOD
Capacity of battery	5~50kWh	5~50kWh	5~50kWh	5~50kWh	5~50kWh	5~50kWh

#### Efficiency

Max. efficiency	97.6%	97.8%	98.0%	98.2%	98.2%	98.2%
Euro European efficiency	97.0%	97.2%	97.3%	97.4%	97.4%	97.5%
MPPT efficiency	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%
Battery charge/discharge efficiency	94.0%	94.0%	96.2%	96.2%	97.4%	97.4%

#### Protection devices

DC switch	yes	yes	yes	yes	yes	yes
DC reverse polarity protection	yes	yes	yes	yes	yes	yes
PV overvoltage protection	Type II	Type II	Type II	Type II	Type II	Type II
Battery reverse protection	yes	yes	yes	yes	yes	yes
Output over current protection	yes	yes	yes	yes	yes	yes
Output AC overvoltage Protection - Varistor	yes	yes	yes	yes	yes	yes
Ground fault monitoring	yes	yes	yes	yes	yes	yes
Grid monitoring	yes	yes	yes	yes	yes	yes
Integrated all-pole sensitive leakage current monitoring unit	yes	yes	yes	yes	yes	yes

#### General Data

Dimensions(W/H/D) in mm	423*505*198	423*505*198	423*505*198	423*505*198	423*505*198	423*505*198
Weight	27kg	27kg	27kg	27kg	27kg	27kg
Operating temperature range	- 25 °C ... +60 °C	- 25 °C ... +60 °C	- 25 °C ... +60 °C	- 25 °C ... +60 °C	- 25 °C ... +60 °C	- 25 °C ... +60 °C
Noise emission (typical)	≤ 35 dB(A)	≤ 35 dB(A)	≤ 35 dB(A)	≤ 35 dB(A)	≤ 35 dB(A)	≤ 35 dB(A)
Altitude	3000m	3000m	3000m	3000m	3000m	3000m
Self-consumption night	<7W	<7W	<7W	<7W	<7W	<7W
Topology	Transformerless	Transformerless	Transformerless	Transformerless	Transformerless	Transformerless
Cooling concept	Natural	Natural	Natural	Natural	Natural	Natural
Environmental Protection Rating	IP65	IP65	IP65	IP65	IP65	IP65
Relative humidity	0...100%	0...100%	0...100%	0...100%	0...100%	0...100%

#### Features

Display	LCD	LCD	LCD	LCD	LCD	LCD
Interfaces:RS232/ RS485/ CAN/ USB/ Wi-Fi/ RF	yes /yes /yes /yes / opt / opt	yes /yes /yes /yes / opt / opt	yes /yes /yes /yes / opt / opt	yes /yes /yes /yes / opt / opt	yes /yes /yes /yes / opt / opt	yes /yes /yes /yes / opt / opt
Warranty: 5 years /10 years	yes / opt	yes / opt	yes / opt	yes / opt	yes / opt	yes / opt

#### Certificates and Approvals

CE, IEC 62040, VDE-AR-N 4105, VDE 0126, UTE C 15-712, EN50438, TR3.2.1, TR3.3.1, CEI 0-21, IEC62116, IEC61727, AS/NZS 4777, G83