



SOLAR INVERTERS SUNMASTER IP44 SERIES

Photovoltaic String Inverters

For more than 10 years, Mastervolt has produced inverters for independent and grid connected solar systems. During this period, over 100,000 PV inverters have been installed all over the world. The Sunmaster series of grid connected inverters is regarded as one of the best performing solar inverters available in the market. Mastervolt is now introducing the long expected Sunmaster IP44 series.

New IP44 series

The Sunmaster IP44 series comprises two different application fields:

- The QS IP44 models for a DC input up to 450 V DC. In terms of electronical design and product topology almost identical with the well-known Sunmaster QS IP23 series: the QS2000 IP44, QS3500 IP44 and QS3500 Max-I IP44.
- For solar systems operating on a higher DC voltage (600 V DC) the new XS range is being developed. The first model is the Sunmaster XS6500 IP44, offering 5 kW continuous output.

All housings comply with protection class IP44 to allow ready installation in protected IP44 areas. As one of the main features, the Sunmaster IP44 series provide the nominal output power even in ambient temperatures circumstances of 40 °C, while maintaining the maximum efficiency.

Display and DC switch as standard

All new models feature an advanced LCD display with miniature data logger as standard. Their extensive storage function allows information to be saved for up to 30 days. In addition, all ENS models are equipped with a robust integrated 600 V/25 A load switch.

Design Wizard !

Design your own PV system using the correct QS inverter with our SysCalc Design Wizard at www.mastervolt.com.



The new Sunmaster QS IP44 series.
Left: QS2000, centre: QS3500 (Max-I), right: XS6500.

Advanced high-frequency performance concept

Due to state-of-the-art, high frequency technology, the transformers in the Sunmaster inverters are very small and light. The HF technology also provides advantages in regard to the total harmonic distortion (THD) of the grid connected inverters: the Sunmaster inverters have the lowest THD. At 5% of their nominal output, they still have an efficiency (95% max.) as high as 90%!

Safe & reliable operation

The Sunmaster performance concept is based on Class II HF safety transformers to ensure galvanic isolation between the solar and the grid side. Monitoring of the grid side complies with all relevant standards, including ENS in compliance with VDE0126.



MultiContact plug and R5485 data bus communication.

4 Reasons for using Mastervolt products

- 15 Years of experience in modern high-frequency technology: safe, efficient, continuous operation combined with a light, compact housing.
- A complete range of products with a wide variety of input voltages and several MPPTTracker inputs: optimal flexibility in terms of design.
- High-quality products: reliable function and continuous operation, an estimated product life of at least 15 years, supported by a comprehensive product warranty and service offer.
- Customer care and services worldwide.

SUNMASTER FEATURES:

- HIGH-FREQUENCY TECHNOLOGY
- INTEGRATED DATA LOGGER, 28 DAYS WITH DISPLAY
- EXCELLENT SYSTEM EFFICIENCY (95% MAX.)
- ADVANCED COMMUNICATION, ENS IN COMPL. WITH VDE0126
- COMPACT AND LIGHT
- WORLDWIDE DISTRIBUTION

PRODUCT RANGE & TECHNICAL SPECIFICATIONS

Model	QS2000 IP44	QS3500 IP44	QS3500 Max-I IP44	XS6500 IP44
Article number	130852000	130853500	130953500	131006500/131016500
GENERAL				
Typical string length	5-9 modules (72 cells), 7-12 modules (54 cells) or 10 to 18 modules (36 cells)		4-6 modules (72 cells), 6-9 modules (54 cells) or 8-12 modules (36 cells)	without/with switch 12-25 modules (36 cells), 7-17 modules (54 cells) or 6-12 modules (72 cells)
Operating temperature	-20 °C to 50 °C, protected against overtemperature			
Storage temperature	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C
Relative humidity	95 % max. - PCB has anti-moisture coating			
Protection degree	IP44	IP44	IP44	IP44
Safety degree	Class I	Class I	Class I	Class I
Galvanic isolation	Class II	Class II	Class II	Class II
Dimension (HxWxD in mm)	471x356x145	545x356x145	545x356x145	725x356x145
Weight	6 kg	7 kg	7 kg	15 kg
SOLAR INPUT (DIRECT CURRENT)				
Nominal power 40 °C amb. temp	1700 W DC	2750 W DC	2750 W DC	5325 W DC
PV power range	1200-2100 Wp	2000-3600 Wp	2000-3600 Wp	4500-7000 Wp
Maximum input	1800 W	2950 W	2950 W	5600 W
MPP tracker ¹⁾	1 MPP tracker	2 MPP tracker	2 MPP tracker	2 MPP tracker
MPP voltage range	100-380 V DC	100-380 V DC	75-260 V DC	180-480 V DC
Maximum voltage	450 V DC	450 V DC	325 V DC	600 V DC
Nominal rated current	7.5 A	2 x 7.5 A or 1 x 15 A	2 x 10 A or 1 x 20 A	2 x 15 A or 1 x 30 A
Start-up power	2 W	4 W	4 W	10 W
String connections	1	2 x 1	2 x 1	2 x 1
DC connector	MultiContact connectors or glands + PCB spring terminals, 4 mm ²			
GRID OUTPUT (INVERTER)				
Voltage	230 V AC (184-265 V, depending on model/setting), single phase			
Nominal output	1600 W	2600 W	2600 W	5000 W ²⁾
Maximum output	1725 W	2750 W	2750 W	5200 W ²⁾
Nominal current	7 A	12 A	12 A	22 A
Frequency	50 Hz (48-52 Hz, depending on model/setting)			
Power factor	0.99	0.99	0.99	0.99
Harmonic distortion (THD)	< 3% @ rated load; in compliance with IEEE p929			
Standby power	0 W	0 W	0 W	< 0.5 W
European efficiency	94%	94%	94.5%	95%
Maximum efficiency	95%	95%	95%	96%
AC connection	PG 13.5 gland + screw terminals 2.5-4 mm ²			
SAFETY REGULATIONS				
General	galvanic isolation between DC and AC side by means of a HF transformer (class II)			
Protection against	<ul style="list-style-type: none"> • ENS models: redundant impedance, voltage and frequency monitoring; anti-islanding, independent switch-off by 2-pole relay and solid state switch; VDE V 0126-1-1:2006 compliant. • QNS models: redundant voltage and frequency monitoring; independent switch-off by 2-pole relay and solid state switch. • UK models: frequency adaptation by software pursuant to G83. 			
Temperature protection	power derating at Tambient > 40 °C ; switch-off at Tindoor > 90 °C			
DC side protection	<ul style="list-style-type: none"> • earth fault detection • overvoltage and undervoltage detection • polarity protection (diodes) • current limitation • voltage peaks (varistor and buffer capacitor) • overload protection (temperature-controlled power derating) 			
AC side protection	<ul style="list-style-type: none"> • current limitation • overvoltage and undervoltage monitoring • overfrequency and underfrequency monitoring • short circuit protection (ceramic fuse) • voltage peaks 			
Reclosure time	10-300 s (depending on model)			
MONITORING				
Display	Integrated LCD display			
External communication	2 RS485 connections to connect the QS data bus			
Optional monitoring accessories	<ul style="list-style-type: none"> • Data Control Basic: software for PC • QS PC-Link: PC adapter for QS data bus • Data Control Premium II: data logger and PC local/remote monitoring/Internet connection • Data Control Professional : data logger and PC local/remote monitoring/Internet connection using current weather data or optional sensors 			
REGULATIONS AND DIRECTIVES				
CE conformity	yes			
EMC directive	89/336/EEC			
Emission	EN 50081-1, EN 55011, EN 55014, EN 55022, VDE 0871 class B			
Harmonics	EN 61000-3-2, IEEEp929, Flicker: 61000-3-3			
Immunity	EN 50082-2			
LV directive	73/23/EEC			
Electrical safety	EN 60950 / ENS : VDE 0126 / UK : G83-2003 technical recommendation			



Data monitoring: The new QS Data Control Premium II. Two Premium II versions are available for different applications:

- Premium II Local with integrated Ethernet (network) interface.
- Premium II Remote with integrated analogue modem.

1) Dynamic; two string connections each are connected in parallel.

2) In Germany 4600 W, single phase.