



## Single Phase Grid-tied Solar Inverter

750W TOUGH TL    1.5KW    3KW  
 1KW                    2KW    3KW-2M

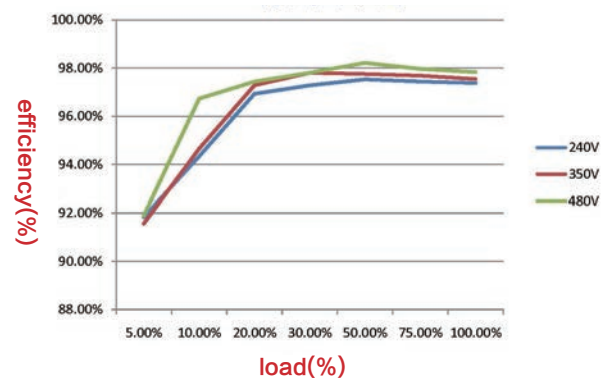
### Description

Tough TL series single phase inverter is a new generation of PV string inverter which has been developed for residential users. Tough TL series inverters have the advantages of compact size, light weight, easy installation and maintenance, and are above all cost efficient.

### Features

- The core technologies are from Germany.
- Software optimization for the power grid with much wider adaptability.
- Global integrated monitoring and management, supporting all kinds of portable mobile devices, HMI is optional.
- Minimum working voltage is 50V.
- Wider voltage range, lower starting voltage, higher conversion efficiency.
- Designed with latest thermal simulation technology for longer service life.

### Efficiency curve



## Specification

	750W	1KW	1.5KW	2KW	3KW	3KW-2M
<b>Input (DC)</b>						
Max. DC input power (W)	900	1200	1700	2200	3300	3300
Max. DC voltage (V)	400	450			500	600
Starting voltage /Min. operation voltage (V)	65/60	80/60	100/80	120/100		
Starting power (W)	30					
MPPT Operating Voltage Range (V)	60-350	80-400	100-410	120-410	120-450	120-550
Number of MPPT/ String Per MPPT	1/1				1/2	2/1
Max. DC current (A) per MPPT x Number of MPPT	10x1	10x1	10x1	13x1	15x1	10x2
DC switch	Optional					
<b>Output (AC)</b>						
Rated power (W)	750	1000	1500	2000	3000	3000
Max. AC output current (A)	3.6	4.5	6.5	9	13	16
AC voltage range	230/180~277Vac According to VDE-AR-N4105, G83/2, C10/11, TF3.2.1, AS4777/3100, CQC					
Grid frequency	50Hz (44~55Hz) / 60Hz (54~65Hz) According to VDE-AR-N4105, G83/2, C10/11, TF3.2.1, AS4777/3100, CQC					
Power factor	≥0.99 (Adjustable)					
THD	< 3% (At Rated Power)					
AC connection	Single-phase (L, N, PE)					
<b>System</b>						
Cooling method	Natural Cooling method					
Max. efficiency	96.80%	96.90%	97.20%	97.20%	97.30%	97.90%
Euro-efficiency	95.95%	96.00%	96.10%	96.10%	96.50%	96.80%
MPPT efficiency	99.9%					
Degree of protection	IP65					
Self-consumption (at night)	<1W					
Topology	Transformerless					
Operating temperature range	-25°C ~+60°C, (derate after 45°C)					
Relative humidity	0~95%, no condensation					
Protection	Over voltage protect ; DC insulation monitoring; DC Over current Protection; Grounding fault monitoring; Grid protection; island protection; Overheating protection; Overvoltage and short circuit protection etc.					
<b>Display and communication</b>						
Display	LED Display (standard) /LCD (Optional)					
System language	English, Chinese, German, Dutch					
Communication interfaces:	RS485 (Standard), WiFi, Ethernet (Optional)					
<b>Mechanical parameters</b>						
Dimension (H x W x D mm)	280x300x138					460x360x150
Weight (kg)	9.5					17
Installation	Wall mounting					
<b>Others</b>						
DC terminal	BC03A, BC03B ( PV-CF-S2, 5-6 (+) ....; PV-CM-S2, 5-6 (-)...., Helios H4 2.5mm²)					
Certifications	VDE-AR-N4105, G83/2, C10/11, TF3.2.1, AS4777/3100, CQC, EN61000-6-1:4, EN61000-3-2:3, EN61000-11:12, IEC 62109-1:2010, LVRT					
Factory warranty (years)	5 (standard) / 10, 15, 20 (optional)					