GROWATT MOD-6000-TL3-X

Growatt MOD 6000TL3-XH VDE Hybrid Inverter

Model: MOD-6000-TL3-X User Manual

1. Introduction

This user manual provides comprehensive instructions for the installation, operation, and maintenance of the Growatt MOD 6000TL3-XH VDE Hybrid Inverter. Designed for photovoltaic (PV) systems, this inverter efficiently converts solar energy for household power supply and energy storage. Please read this manual thoroughly before installation and operation to ensure proper functioning, safety, and longevity of the device.

The Growatt MOD 6000TL3-XH is a compact and highly efficient inverter, ideal for smaller PV systems. It features integrated WiFi for convenient monitoring via computer or smartphone, and includes an MPP Tracker for optimized energy yield even in varying weather conditions. It complies with VDE AR-N 4105:2018 standards.

2. Safety Instructions

Always adhere to the following safety precautions to prevent injury, damage to the inverter, or other property damage. Only qualified personnel should perform installation and maintenance.

- **Electrical Hazard:** Do not open the inverter casing. There are no user-serviceable parts inside. High voltage is present even after disconnection from the grid and PV array. Wait at least 5 minutes after disconnecting all power sources before touching any internal components.
- **Grounding:** Ensure the inverter is properly grounded according to local electrical codes.
- **Installation Environment:** Install the inverter in a well-ventilated area, away from flammable materials, and protected from direct sunlight, rain, and excessive dust.
- **DC Switch:** Always turn off the DC switch and disconnect AC power before performing any work on the inverter.
- **Children and Pets:** Keep children and pets away from the inverter.
- **Emergency:** In case of fire, use a dry chemical extinguisher. Water can cause electrical shock.

3. Product Overview

The Growatt MOD 6000TL3-XH inverter is designed for optimal performance and ease of use. Below are its main components and features.

3.1 Components

- Growatt MOD 6000TL3-XH Inverter Unit
- WiFi Stick (for monitoring and remote management)

- Mounting Bracket and Hardware (not explicitly listed in "whats_in_the_box" but implied for installation)

3.2 Key Features

- Maximum Efficiency: Approximately 98%
- VDE Approval: Complies with VDE AR-N 4105:2018
- Integrated WiFi: For convenient monitoring and remote firmware updates
- OLED Display: For local status indication
- Max. Output Power: 6000W
- Corrosion Resistant Design
- Smart Module Functionality
- Maintenance-Free Operation
- Integrated DC Switch
- DC/AC Surge Arresters
- Multiple Protection Features: Insulation resistance detection, ground fault monitoring, grid monitoring, islanding detection, residual current monitoring, AFCI protection.
- Dual MPPTs: Two Maximum Power Point Trackers for optimized energy harvesting from different solar array orientations.

3.3 Inverter Components and Interfaces



Figure 3.1: Front view of the Growatt MOD 6000TL3-XH inverter, showcasing its compact design and the included WiFi stick for remote monitoring. The front panel features the Growatt logo and an OLED display for status indication.



Figure 3.2: Side view of the inverter, highlighting the integrated DC switch. This switch allows for safe disconnection of the DC input from the solar panels for maintenance or emergency shutdown.



Figure 3.3: Bottom view of the inverter, showing the various connection ports. These include inputs for PV strings (PV1+, PV1-, PV2+, PV2-), battery connections (BAT+, BAT-), communication ports (COM, USB), and the AC output connection.

4. Setup & Installation

Proper installation is crucial for the safe and efficient operation of your Growatt inverter. This section outlines the general steps for setting up the device.

4.1 Pre-installation Checks

- Verify that the inverter model matches your system requirements.
- Ensure the installation site meets environmental requirements (temperature, humidity, ventilation).
- Confirm all necessary tools and safety equipment are available.

4.2 Mounting the Inverter

Mount the inverter vertically on a sturdy wall or frame, ensuring adequate clearance for ventilation and cable connections. Use the provided mounting bracket and hardware.

4.3 Electrical Connections

1. **Grounding:** Connect the inverter's grounding terminal to a reliable ground point.
2. **AC Output Connection:** Connect the AC output cable from the inverter to your electrical grid. Ensure correct phase, neutral, and ground connections.
3. **DC Input Connection (PV):** Connect the positive and negative cables from your solar PV array to the corresponding PV input terminals (PV1+, PV1-, PV2+, PV2-). Ensure correct polarity and that the open-circuit voltage does not exceed the inverter's maximum input voltage.
4. **Battery Connection (Optional):** If using a battery storage system, connect the battery cables to the BAT+ and BAT- terminals, observing correct polarity.

4.4 WiFi Stick Installation

Insert the provided WiFi Stick into the designated USB port on the inverter (refer to Figure 3.3). Once inserted, the inverter will automatically detect the stick. Follow the instructions in the separate WiFi Stick manual or Growatt's online resources for network configuration and monitoring setup.

4.5 Initial Power-Up

1. Ensure all electrical connections are secure and correct.

2. Turn on the external AC circuit breaker.
3. Turn on the integrated DC switch on the side of the inverter (refer to Figure 3.2).
4. The inverter will perform a self-test and begin operation. Monitor the OLED display for status indications.

5. Operating Instructions

Once installed and powered on, the Growatt MOD 6000TL3-XH inverter operates largely automatically. This section covers basic operation and monitoring.

5.1 Turning On/Off

- **To Turn On:** Ensure AC circuit breaker is on, then turn the DC switch to the "ON" position.
- **To Turn Off:** Turn the DC switch to the "OFF" position, then turn off the external AC circuit breaker. Wait for the inverter to completely shut down before proceeding with any maintenance.

5.2 Monitoring via OLED Display

The OLED display on the front of the inverter provides real-time operational data and status messages. You can typically cycle through different screens to view information such as:

- Current Power Output (W)
- Daily Energy Production (kWh)
- Total Energy Production (kWh)
- Input Voltage and Current (PV)
- Grid Voltage and Frequency
- System Status and Error Codes

5.3 Monitoring via WiFi (ShinePhone App / ShineServer)

The integrated WiFi stick allows for convenient remote monitoring of your PV system. After configuring the WiFi stick with your home network, you can access detailed performance data via the Growatt ShinePhone mobile application or the ShineServer web portal. This includes:

- Real-time power generation
- Historical energy production data (daily, monthly, yearly)
- System status and alerts
- Remote configuration and firmware updates

Refer to the Growatt WiFi Stick user guide for detailed setup and usage instructions for the monitoring platform.

6. Maintenance

The Growatt MOD 6000TL3-XH inverter is designed for maintenance-free operation. However, periodic checks can help ensure optimal performance and longevity.

6.1 Routine Checks

- **Visual Inspection:** Periodically inspect the inverter for any visible damage, loose connections, or signs of corrosion.
- **Ventilation:** Ensure that the ventilation fins are clear of dust and debris to allow for proper heat dissipation. Clean gently with a soft brush or compressed air if necessary.
- **Performance Monitoring:** Regularly check the inverter's performance via the OLED display or the monitoring platform to ensure it is generating power as expected.

6.2 Firmware Updates

Growatt may release firmware updates to improve performance, add features, or address issues. These updates can typically be performed remotely via the WiFi stick and the Growatt monitoring platform. Ensure your inverter is connected to the internet for these updates. Do not interrupt the power supply during a firmware update.

7. Troubleshooting

This section provides guidance for resolving common issues you might encounter with your Growatt inverter. For more complex problems, contact qualified service personnel or Growatt support.

7.1 Common Issues and Solutions

Problem	Possible Cause	Solution
Inverter not turning on / No power output	DC switch is off AC circuit breaker is off Insufficient solar irradiance Loose wiring connections	Turn DC switch to "ON" Turn on AC circuit breaker Wait for sufficient sunlight Check all wiring connections (ensure power is off first)
Low power output	Partial shading on PV panels Dirty PV panels Suboptimal panel angle	Check for shading obstructions Clean PV panels Consult with installer for panel optimization
Error message on display	Specific internal fault or external condition	Note down the error code and refer to the detailed error code list in the full technical manual or contact Growatt support.
WiFi monitoring not working	WiFi stick not properly inserted Network connectivity issues Incorrect WiFi configuration	Re-insert WiFi stick Check home router and internet connection Reconfigure WiFi stick using the Growatt app/web interface

8. Specifications

The following table provides the technical specifications for the Growatt MOD 6000TL3-XH inverter. For detailed specifications across different models, please refer to the official Growatt data sheet.

Datenblatt	MOD 3000TL3-XH	MOD 4000TL3-XH	MOD 5000TL3-XH	MOD 6000TL3-XH	MOD 7000TL3-XH	MOD 8000TL3-XH	MOD 9000TL3-XH	MOD 10KTL3-XH
Eingang (DC)								
Max. PV-Leistung (STC)	4500W	6000W	7500W	9000W	10500W	12000W	13500W	15000W
Max. Eingangsspannung	1100V							
Start-Spannung	160V							
Nominale DC Spannung	600V							
MPP-Spannungsbereich	140V-1000V							
Anzahl unabh. MPP-Tracker	2							
Anzahl der Strings pro MPP-Tracker	1							
Max. Eingangsstrom pro MPP-Tracker	16A							
Max. Kurzschlussstrom pro MPP-Tracker	20A							
Batteriedaten (DC-Batterie)								
Kompatible Batterien	ARK XH Battery System(7.68kWh-25.6kWh)							
Betriebsspannnungsbereich	600 V-950 V							
Max.Betriebsstrom	11A				18.5A			
Max. Ladeleistung	6000W				10000W			
Max. Entladeleistung	3300W	4400W	5500W	6600W	7700W	8800W	9900W	11000W*
Ausgang (AC)								
AC-Nennleistung	3000W	4000W	5000W	6000W	7000W	8000W	9000W	10000W
Max. AC-Scheinleistung	3300VA	4400VA	5500VA	6600VA	7700VA	8800VA	9900VA	11000VA*
AC-Nennspannung (Bereich*)	220V/380V, 230V/400V (340-440V)							
AC-Netzfrequenz (Bereich*)	50/60 Hz (45-55Hz/55-65 Hz)							
Max. Ausgangsstrom	5.0A	6.7A	8.3A	10.0A	11.7A	13.3A	15.0A	16.7A
Einstellbarer Leistungsfaktor	0,8 kapazitiv...0,8 induktiv							
Klirrfaktor (THDi)	<3%							
AC Netzanschluss	Einphasig							
Wirkungsgrad								
Max. Wirkungsgrad	98.3%	98.3%	98.3%	98.3%	98.6%	98.6%	98.6%	98.6%
Europ. Wirkungsgrad	97.5%	97.5%	97.5%	97.5%	98.1%	98.1%	98.1%	98.1%
MPPT-Anpassungswirkungsgrad	99.9%							
Schutzvorrichtungen								
DC Verpolungsschutz	Ja							
DC Trennschalter	Ja							
DC/AC Überspannungsschutz	Typ II / Typ III							
Isolationsmessung	Ja							
AC Überstromschutz	Ja							
Erdschlussüberwachung	Ja							
Netzüberwachung	Ja							
Inselnetzbildungsschutz	Ja							
Fehlerstrom-Überwachungseinheit	Ja							
String-Fehlerüberwachung	Ja							
AFCI Schutzfunktion	Ja							
Generelle Daten								
Abmessungen (B / H / T)	425/387/147mm	425/387/147mm	425/387/147mm	425/387/147mm	425/387/178mm	425/387/178mm	425/387/178mm	425/387/178mm
Gewicht	12.5kg	12.5kg	12.5kg	12.5kg	14kg	14kg	14kg	14kg
Arbeitstemperaturbereich	- 25°C ... +60°C							
Nächtlicher Eigenverbrauch	< 5.5W							
Betriebsart	Transformatorlos							
Kühlung	Intelligente Kühlung							
Schutzklasse	IP66							
Luftfeuchtigkeit	0~100%							
Max. Höhe der Installation	4000m							
DC Verbindung	H4/MC4(opt)							
AC Verbindung	Schraubklemme							
Display	OLED+LED/WIFI+APP							
Schnittstellen: RS485 / USB/WI-FI / GPRS/ RF/LAN	Ja/Ja/opt/opt/opt/opt							
Garantie: 10 Jahre	Ja							
CE, VDE0126, Greece, EN50549, C10/C11, VFR 2019, IEC62116, IEC61727, IEC 60068, IEC 61683, CEI0-21, N4105, TOR Erzeuger TOR Erzeuger,G98/G99, G100, AS4777, UNE217001, UNE206007, PO12.2								

* Für Belgien C10/C11, MOD 10KTL3-XH ist die max. Ausgangsleistung auf 10000VA begrenzt.
* Der AC-Spannungs- und der Frequenzbereich können je nach länderspezifischer Netznorm variieren. Alle Spezifikationen können unangekündigt geändert werden.
* Die AFCI-Funktion muss nach der Installation aktiviert werden, wenn sie angewendet werden soll.

Figure 8.1: Official technical data sheet for the Growatt MOD TL3-XH series inverters, including detailed electrical and general specifications for various models, such as input/output parameters, efficiency, and protection features. The MOD 6000TL3-XH model is highlighted within this table.

Category	Parameter	Value (MOD 6000TL3-XH)
Input (DC)	Max. PV Input Power	7500W
	Max. DC Voltage	1100V
	Start-up Voltage	160V
	MPP Voltage Range	140V-1000V
	Number of MPPTs / Strings per MPPT	2 / 1
	Max. Input Current per MPPT	16A
Output (AC)	Rated AC Power	6000W
	Max. AC Power	6600W
	Rated Grid Voltage	230V/400V (3L/N/PE)
	Rated Grid Frequency	50Hz/60Hz
Efficiency	Max. Efficiency	98.3%
	European Efficiency	97.5%
Protection Features	DC Reverse Polarity Protection	Yes
	AC Overcurrent Protection	Yes
	Insulation Resistance Detection	Yes
	Ground Fault Monitoring	Yes
	AFCI Protection	Yes
General Data	Dimensions (H/W/D)	425/387/147mm
	Weight	12.8kg
	Operating Temperature Range	-25°C to +60°C
	Protection Degree	IP66
	Cooling	Natural Convection
	Display	OLED + LED

9. Warranty and Support

Growatt provides a comprehensive warranty for its products, ensuring peace of mind for users.

9.1 Warranty Information

The Growatt MOD 6000TL3-XH inverter comes with a **10-year warranty**. This warranty covers defects in materials and workmanship under normal use and service conditions. Please retain your proof of purchase for warranty claims. For full warranty terms and conditions, refer to the official Growatt warranty policy document or their website.

9.2 Technical Support

If you encounter any issues that cannot be resolved using the troubleshooting guide in this manual, or require further technical assistance, please contact your installer or Growatt's official customer support. When contacting support, please have your inverter's model number and serial number ready.
For the latest support contact information, please visit the official Growatt website:www.growatt.com

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