

Installation and user guide

Inverter

3800 TL, 3801 TL, 4300 TL, 4800 TL, 5300 TL, 6300 TL, 7200 TL



As at 10/2013, Material no. 747 405-AD

PLATINUM®
Next Energy Solution.

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1 Introduction

1.1 PLATINUM® TL

The inverters in the PLATINUM® TL series are single-phase feed-in inverters for different power ranges, see “Technical data” on page 48.

With the aid of the PLATINUM® network (EIA485), up to 50 PLATINUM® inverters can be connected to form a system.

Options

The following options are available to enhance an inverter or inverter system:

- Remote monitoring or remote readouts with the PLATINUM® WebMaster
- Evaluation of plant data with the PLATINUM® PV monitor
- Remote-controlled AC power reduction via an external monitoring device

1.2 About this manual

This installation and operating manual describes the installation and operation of the PLATINUM® inverters of the types 3800 TLD, 3801 TLD, 4300 TLD, 4800 TLD, 5300 TLD, 6300 TLD, 7200 TLD.

Additional documents

The following additional documents are available in the download area of our website www.platinum-nes.com:

- Detailed installation and user guide
- Information on fault current protection devices
- Detailed event list for detecting/eliminating errors
- Overview of country and grid codes
- Declaration of conformity and certificates
- Manufacturer's warranty

1.3 Symbols used

1.3.1 Structure of warnings




WARNING WORD

Type, source and consequence of the hazard!

- Measures to avoid the hazard.

1.3.2 Hazard levels in warnings

Symbol	Warning word	Probability of occurrence	Consequences of non-observance
	DANGER	Imminent danger	Death, serious injury
	WARNING	Potential danger	Death, serious injury
	CAUTION	Potential danger	Minor injury
–	CAUTION	Potential danger	Damage to property






1.3.3 Notes



Notes give tips on how to work easily and safely or contain further information.

1.4 Symbols on product and packaging

The following sticker is attached to the inverter:

	Vorsicht: Gehäusetemperatur >60°C!	742618 - AD
	Caution: The temperature of the enclosure can be higher than 60°C!	
	Warnung: Entladezeit der Kondensatoren bis zu 40 Minuten!	
	Warning: capacitors require up to 40 minutes to discharge!	
	Achtung: Wechselrichter nur an TN- oder TT-Netze (siehe IEC60364-1) mit 230V anschließen	
	Attention: Connect inverter to TN- or TT-grid-type (see IEC60364-1) with 230V only!	
	Warnung: Eingriffe in und am Gerät sind nur durch Elektro-Fachkräfte durchzuführen!	
	Warning: All work inside and around the device must be done by skilled personnel only!	
	Dieses Gerät vor jedem Eingriff von AC und DC trennen: PV-Generator am DC-Stecker trennen / Netzversorgung an AC-Klemme trennen	
	This device must be completely isolated from AC and DC voltage before opening: pv-generator disconnected on DC-plug / main supply disconnected on AC-clamp	

2 Safety

2.1 Intended usage

- Inverters are to be used solely for the purpose of feeding photovoltaically generated solar energy into the public grid.
- All other usage does not comply with the regulations.

2.2 Improper usage

- The inverters are not to be used in off grid PV plants.
- The inverters are not to be used in vehicles.
- The inverters are not to be used in areas at risk of explosion (flour dust, sawdust, etc.).
- The inverters are not to be exposed to direct sunlight.
- The inverters are not to be used in areas in which the ammonia content of the air exceeds 20 ppm.
- All warranty claims will be rendered null and void in the event of failure to comply with the warranty terms or the information provided in this operating and installation manual.

2.3 Personnel requirements

The inverter may only be installed and put into operation in accordance with this installation and user guide by trained specialist personnel, for example:

- Service partners authorised by PLATINUM GmbH
- Authorised specialist personnel with knowledge of the applicable guidelines and standards

2.4 General safety instructions

- The inverters are to be used in their original state without independent modifications and in a technically perfect condition.
- Steps must be taken to ensure that the following are adhered to when assembling and connecting the inverter and the PV system:
 - Guidelines and regulations valid in the respective country
 - Provisions of the trade associations, TÜV, VDE (Association for Electrical, Electronic & Information Technologies)
 - Technical connection conditions of the energy supplier responsible
 - National and international regulations and provisions
- Ensure that all protection devices are working correctly.
- Observe the operating conditions; see “Technical data” on page 48.

3 Installation

3.1 Scope of delivery

- Inverter
- Wall bracket
- Brief guide

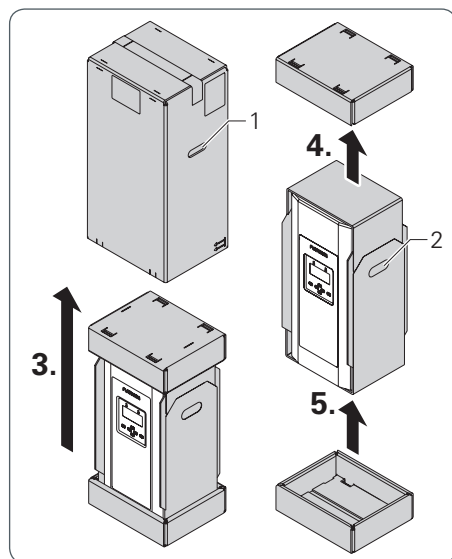
3.2 Unpacking



CAUTION

The inverter is heavy!

- ▶ Ask another person to help you unpack and lift it.
- ▶ Wear safety shoes when unpacking the inverter and during installation.
- ▶ Ensure that the inverter is positioned securely.



1. Place the box upright (note the lettering on the box).
2. Cut the retaining straps without damaging the box.
3. Grab the handle openings (1) on the outer jacket of the box and lift it up and off.
4. Take off the cover from the box.
5. Lift the inverter by the handle openings (2) out from the bottom of the box.
6. Set down the inverter.



The supplied brief guide is located underneath the protector; see 13.

3.3 Assembly

3.3.1 Safety instructions



WARNING

Injury may result if the inverter falls!

- ▶ Use fixing materials suited to the assembly wall and the weight of the inverter.
- ▶ Get a second person to help with assembly and disassembly.
- ▶ Wear safety shoes during assembly and disassembly.
- ▶ Ensure that the inverter is positioned securely.



CAUTION

Material damage due to excessive build-up of dust!

The protection class IP66 does not apply to the communication interface.

- ▶ Avoid excessive build-up of dust.
- ▶ Avoid build-up of dust with electrically conductive dust particles.

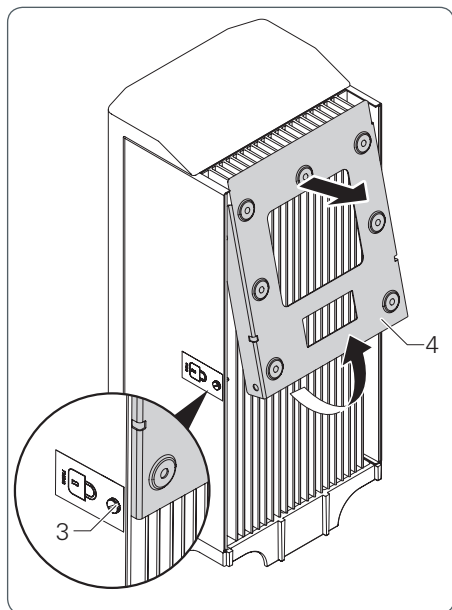


In order to comply with the requirements of standard IEC-62109, a possibility must be provided for tool-free isolation of the solar generator. If the design does not feature an integrated DC isolator then an external isolation device is mandatory; this must be easily accessible.



PLATINUM GmbH recommends that the inverter should not be installed in living quarters.

3.3.2 Disassemble the wall bracket from the inverter.

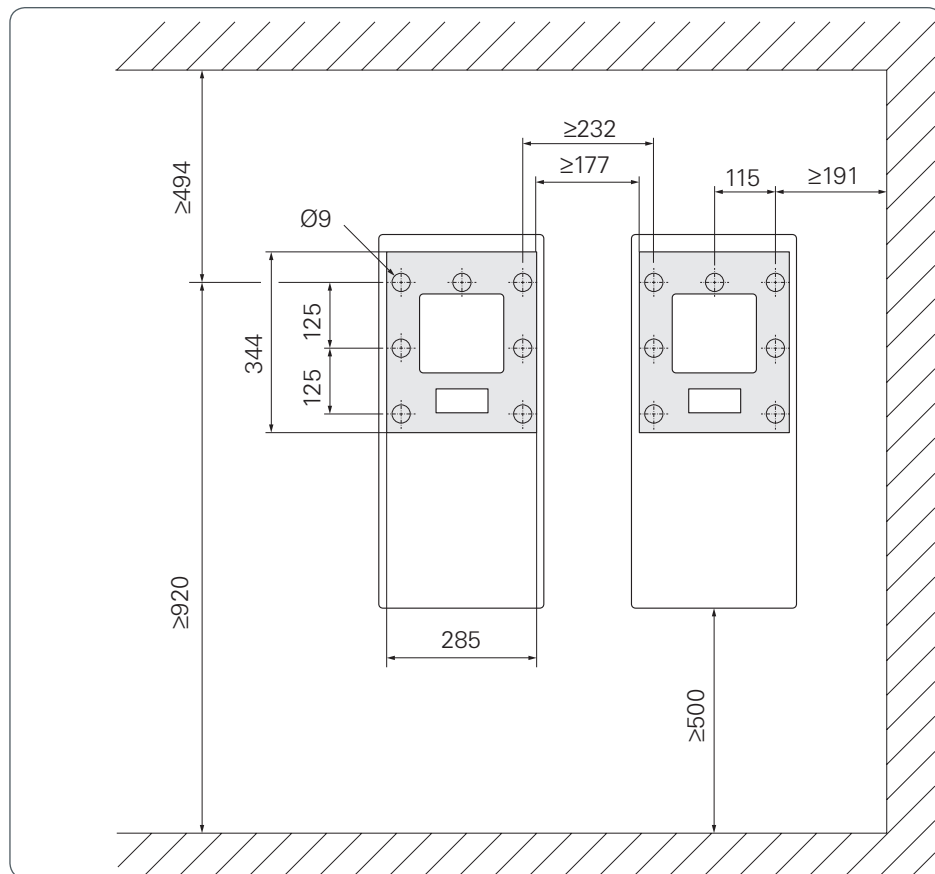


1. Loosen but do not remove the safety screws on the sides (3).
2. Grab the wall bracket (4) at the bottom and lift it up off the inverter.

3.3.3 Mounting the inverter

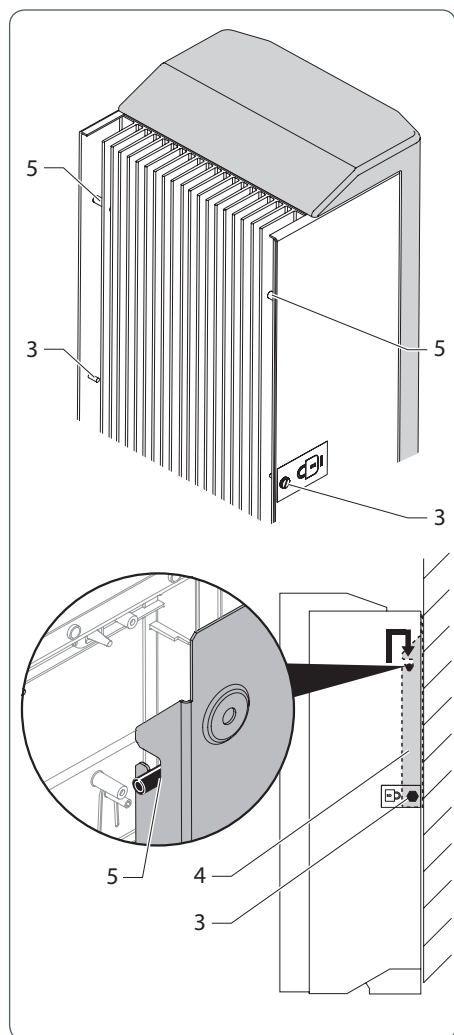


The upper cutout in the wall bracket corresponds to the position of the display and buttons on the mounted inverter.



Dimensions in mm

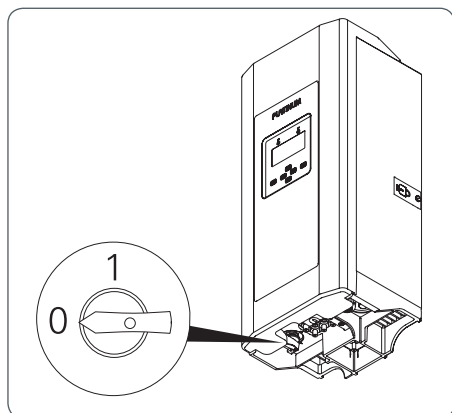
1. Choose a suitable location for assembly. Take into account dimensions and distances.
2. Fix the wall bracket to the assembly wall with suitable fixing materials.



1. Working from underneath, hook the hanger of the inverter (5) at the top in the slotted piece of the wall bracket (4).
2. Ensure that the inverter is fitted correctly on the wall bracket.
3. Secure the inverter by tightening the safety screws (3) on the sides.

3.4 Connection

3.4.1 Preparatory work

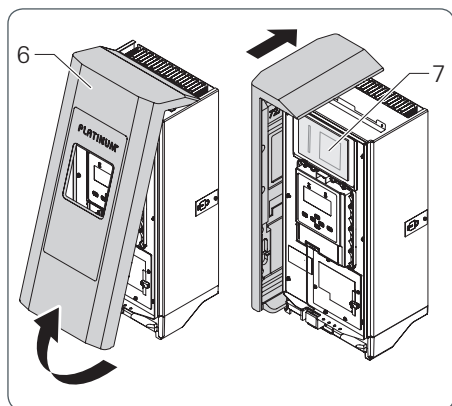


On devices with a DC disconnect

- Move the switch knob of the DC disconnect on the underside of the device to the "0" position.

On devices without a DC disconnect

- Disconnect the DC voltage side with the external isolation device from the solar generator.



1. Grab the protector (6) by its underside and pull it off the inverter.
2. Take out the brief guide (7).
3. Hang the protector in one of the holders on the sides of the inverter.

3.4.2 Connect the AC voltage



DANGER

Risk of death due to high AC voltage!

- ▶ Switch off the mains voltage supply (AC side) before connecting the inverter (safety device).
- ▶ Make sure that the central isolation device can be accessed freely.
- ▶ Only connect the inverter to TN or TT networks (see IEC 60364-1) with 230 V.
- ▶ Observe max. fuse protection permitted on the AC voltage side, see “Technical data” on page 48.
- ▶ Make the AC voltage connection with a cable isolator switch. PLATINUM GmbH recommends a type C cable isolator switch.
- ▶ If an external residual current protective device is required, PLATINUM GmbH recommends using a residual current protective device (RCD) of type A.

CAUTION

Destruction of the inverter!

- ▶ Never connect inverters between two phases.
- ▶ Never mix up the phases with PE or N.
- ▶ Distribute the inverters across the three phases in such a way that the differences between the AC power levels on the different phases do not exceed the maximum permitted unbalanced load of the network operator.

Prepare the connection cable for the AC voltage

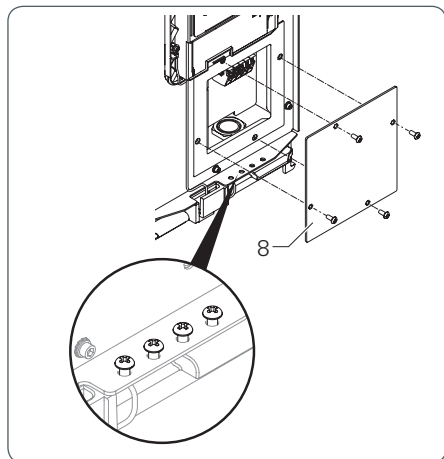


Dimensioning the wire cross section is the responsibility of the electrician and depends on the cable length and installation situation.

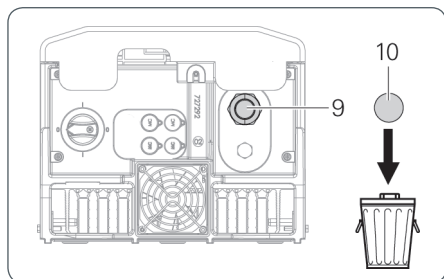
- Min. cross section 4 mm²
- Max. cross section 16 mm²

1. Protect the AC voltage connection lines with appropriate fuses, see “Technical data” on page 48.
2. Strip 18 mm of insulation from the AC voltage connection lines and add wire-end sleeves.

Connect

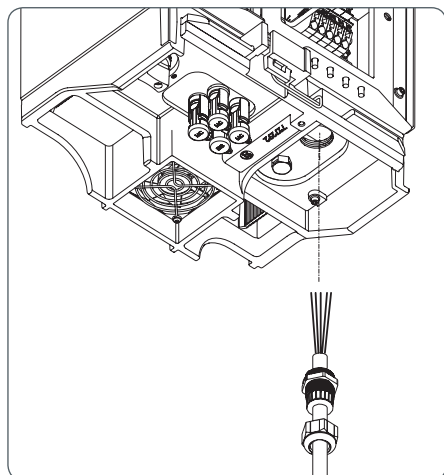


1. Take off the cover (8) from the AC voltage connection by removing 4 screws.
2. Put the screws in the row of holes.

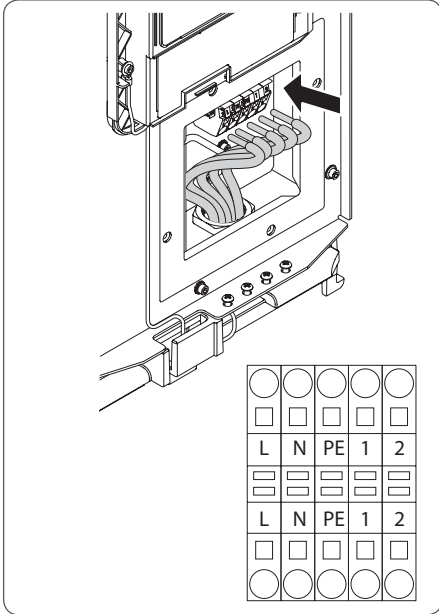


3. Unfasten the AC screw connection (9) with seal from the underside of the inverter.

The cable entry is sealed with a thin protective layer (10) against external influences. This protective layer needs to be removed.



4. Direct the prepared AC voltage connection line through the AC screw connection and seal.
5. Feed the AC voltage connection line into the housing from below.
6. Tighten the AC screw connection.



7. Connect the AC voltage connection cable to the inverter:
 - Open the terminal with a screwdriver.
 - Insert the conductor.
 - Remove the screwdriver.

Terminal Assignment

L	Feed phase L1
N	Neutral
PE	Potential equalisation
1	Monitoring phase L2, for 3-phase ENS only
2	Monitoring phase L3, for 3-phase ENS only

8. Refit the cover of the AC voltage connection using the 4 screws

3.4.3 Connect DC voltage



DANGER

Risk of death due to high DC voltage! A voltage is present at the PV modules when it is bright.

- ▶ Before connecting the inverter, check whether voltage is applied to the generator's DC voltage connection.
- ▶ Before connecting the inverter, check whether the polarity of the DC voltage is correct.
- ▶ If voltage is applied, wear insulating protective clothing and face protection.
- ▶ Ensure that the cable plug has engaged completely with the socket.
- ▶ Detach the DC voltage cable only if the inverter is not in operation.
- ▶ Make sure that the DC isolator or a central isolation device can be accessed freely.
- ▶ Do not ground the poles of the PV modules. The inverter does not have a transformer.

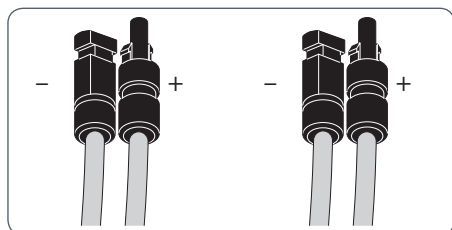
**WARNING**

Risk of electric shock and material damage!

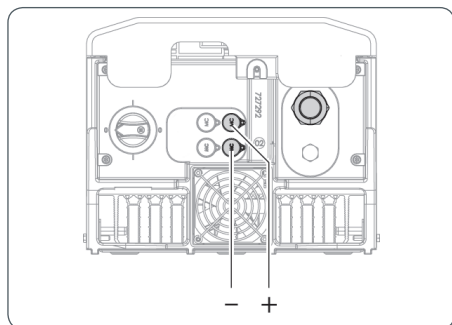
- ▶ Use only the original DC voltage Multi-Contact MC4 cable plug.
- ▶ Only connect PV modules that meet the requirements of IEC 61730 class A.
- ▶ Ensure that the max. DC voltage permitted is not exceeded.
- ▶ Ensure that the max. direct current permitted per string is not exceeded.



If more than one string is connected, make sure that the quantity and type of solar modules and the voltage of strings to be connected in parallel are the same.



1. Fit original Multi-Contact MC4 connectors to each string of the DC voltage cable. Make sure that the polarity is correct here.

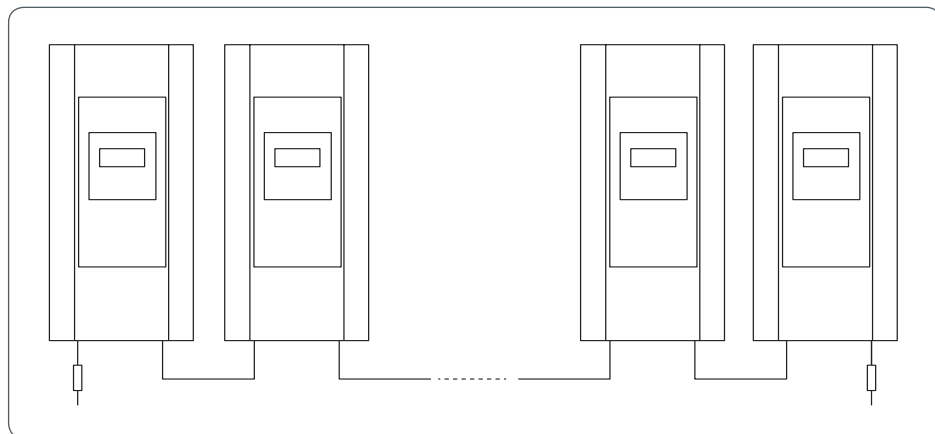


2. Take off the protective caps from the required DC voltage connections.
3. Insert the prepared DC voltage connectors into the DC voltage connections. In the process, make sure that the connectors lock in place correctly.



Fit protective caps to plug connectors that are not used on the inverter.

3.4.4 Connection to the PLATINUM® network (EIA 485)

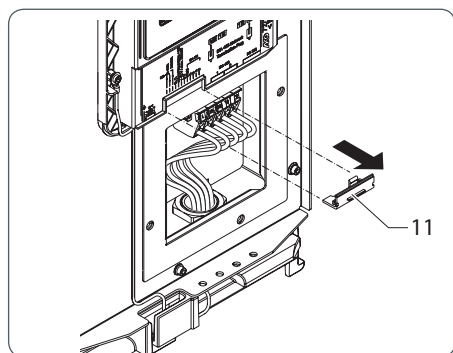


Up to 50 PLATINUM® inverters can be connected with monitoring devices into a network with an overall length of up to 1000 m.

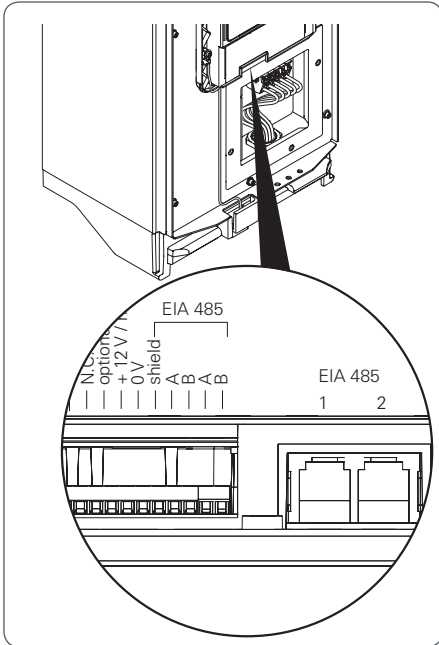
Network cable

- CAT 5 shielded twisted pair cable with pre-assembled RJ45 plugs (pin 3 = B and pin 6 = A)
 - or –
- Twisted pair of wires of a CAT 5 cable

Connect



1. Take off the cover (11) from the terminal strip.



2. Connect the network cables in the inverter.

CAT 5 cable with RJ45 plug

- Incoming cable: Socket 1
- Outgoing cable: Socket 2

CAT 5 cable with 2 twisted wires

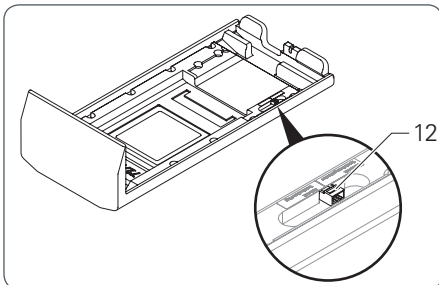
- Incoming cables:
Left-hand terminals A, B
- Outgoing cables:
Right-hand terminals A, B
- Shielding: Shield

→ Ensure that signal lines A and B are not connected incorrectly.

Termination

An integrated terminating resistor can be activated at both open ends of the network (at the first and last inverters).

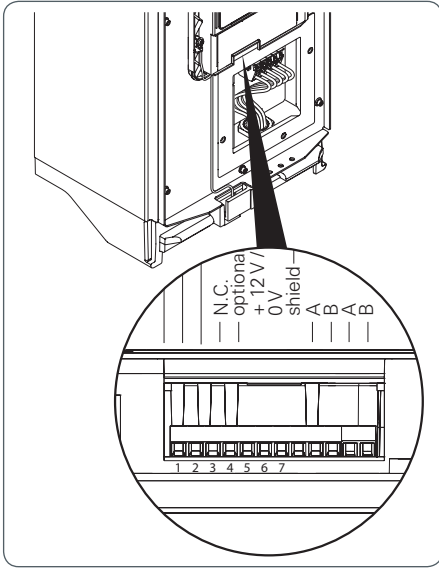
Terminating ensures that the network functions correctly.



1. Remove the terminating plug (12) from the protector.
2. Connect the terminating plug to socket 1 of the first and last inverter.

3.4.5 Further connections on the terminal strip

On the terminal strip, there are further terminals for the connection of a potential-free alarm contact, an external consumer and an input.



- (1) Alarm contact (NC contact)
- (2) Alarm contact (centre contact)
- (3) Alarm contact (NO contact)
- (4) Not used
- (5) Input, 12 V max. (optional)
- (6) Supply voltage for external consumer, 12 V, 300 mW max.
- (7) Supply voltage for external consumer, 0 V

Alarm contact

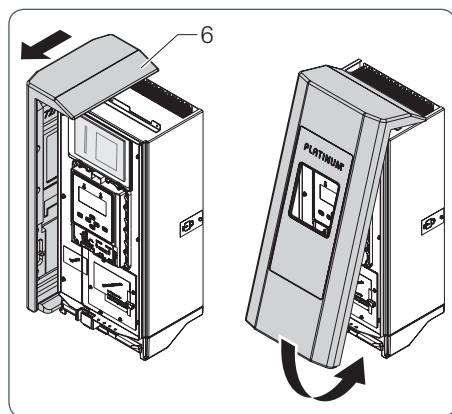
In the event of a fault, the contact closes and activates the alarm system (visual or acoustic) if required.

→ For the supply voltage, only use a safety extra-low voltage (SELV) with a maximum voltage of 24 V.



The alarm contact can be configured in the menu
SETTINGS → ALARM FUNCTION; see 34.

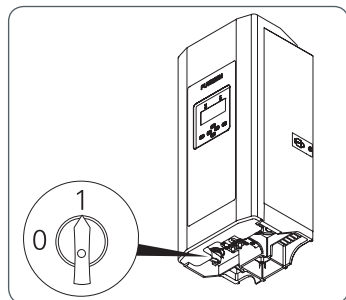
3.4.6 Final tasks



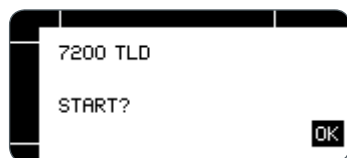
1. Refit the cover on the terminal strip.
2. Take off the protector (6) from the side position.
3. Place the upper part of the protector on the upper holder and gently press it onto the housing.
4. Slide the lower part of the protector into the lower holder.

4 Placing into operation

4.1 Switch on



1. Switch on mains voltage supply (safety device).
2. Switch on the DC voltage via the DC disconnect on the underside of the device or via the external isolation device.



The inverter type appears on the display along with the prompt "START?".

4.2 Initial operation



- To transfer all settings correctly, initial operation must be conducted in full once.
- When installing several inverters that are linked with each other via the PLATINUM[®] network (EIA485), initial operation can be performed on any inverter (master programming). For this to be possible, all inverters in the network must be switched on.
- The inverter automatically transfers the setting values to the other inverters via the PLATINUM[®] network (EIA485).
- Every inverter is allocated a number automatically during initial operation. This number can be changed and freely assigned in a further step.
- The inverters on which no data is entered display different screen content depending on the menu. If data cannot be entered, the inverter displays the start screen.
- During initial operation, all inverters connected to the PLATINUM[®] network are blocked.

4.3 Initial operation menu

4.3.1 Overview

The initial operation menu distinguishes between the initial operation of a device in a new PLATINUM® network to be configured and modifications to an existing PLATINUM® network (exchange inverter, reconfiguration).

Initial operation	Exchange inverter/reconfiguration
Start	Start
Language	Language
Network scan	Network scan
Change device number	Exchange inverter
	Reassign numbers
Country code *	Country code *
Date	Date
Time	Time



* The country code can only be changed for a period of four hours after initial operation and feed-in starts. This menu will not be displayed later.

4.3.2 Description of the initial operation menu



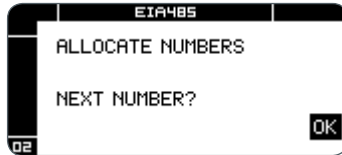
Changing the date and time can cause saved data to be overwritten or lead to gaps in data logging.
During initial operation, the date and time must be entered completely once.

Initial operation menu	
Start	Confirm prompt with OK .
Language	Select the language required using the ▼/▲ buttons and confirm with OK .
Network scan	<p>The inverter scans the PLATINUM® network connected and then displays the number of participants and inverters in the network.</p> <ul style="list-style-type: none">▪ If the number of participants and inverters is correct, confirm with OK.▪ If the number of participants and inverters displayed is not correct:<ul style="list-style-type: none">– Check the wiring.– Select REPEAT using the ◀/▶ buttons and confirm with OK. <p>The inverter recognises only those network participants that are correctly connected via the PLATINUM® network.</p>
Change device number/ reassign numbers	<p>During initial operation, the inverter numbers are assigned automatically in the network.</p> <div data-bbox="280 930 622 1085"></div> <ul style="list-style-type: none">▪ If the numbers set automatically are to be retained, confirm with NO and continue to the next menu option. The automatic numbers for all inverters in the network are transferred.

Initial operation menu

Change device number/reassign numbers

- If different numbering is required, choose YES using the ◀▶ buttons and choose **OK** to open the menu for changing device numbers. The following screen appears on all inverters in the network.

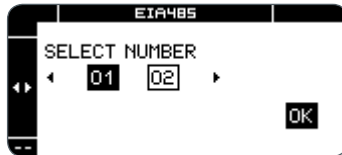


- On the desired first inverter, confirm NEXT NUMBER? with **OK**. The number 1 will be assigned to the inverter.
- Confirm NEXT NUMBER? with **OK** for every inverter in the network in the order desired. The next number in each case will be assigned to the inverter.

Exchange inverter

This menu option appears only if a new inverter is detected in an existing network. In this case, the numbers of the inverters replaced can be used.

This must be configured on every inverter replaced.



- If the number displayed (of the inverter replaced) is to be used, confirm with **YES** and continue to the next menu.
- If different numbering is required, choose NO using the ◀▶ buttons and choose **OK** to open the menu for changing device numbers.

Initial operation menu

- Country code** Select the country required using the ▼/▲ buttons and confirm with **OK**.
Further settings may be required depending on the country. These settings depend on the network operator.
The country code is automatically applied to all network participants.



The country code can only be changed for a period of four hours after initial operation and feed-in starts. This menu will not be displayed later.

- Date** Enter the current date.
- Use the ▼/▲ buttons to set the digits.
 - Use the ◀/▶ buttons to continue to the next digit.
 - Choose **OK** to confirm the date entered.

- Time** Enter the current time.
- Use the ▼/▲ buttons to set the digits.
 - Use the ◀/▶ buttons to continue to the next digit.
 - Choose **OK** to confirm the time entered.
- The date and time are automatically applied to all network participants.



The date and time must be confirmed with **OK**, otherwise initial operation cannot be completed.

Once the date and time have been entered, the **TIME SETTINGS** screen appears; see “**SETTINGS** menu” on page 33.



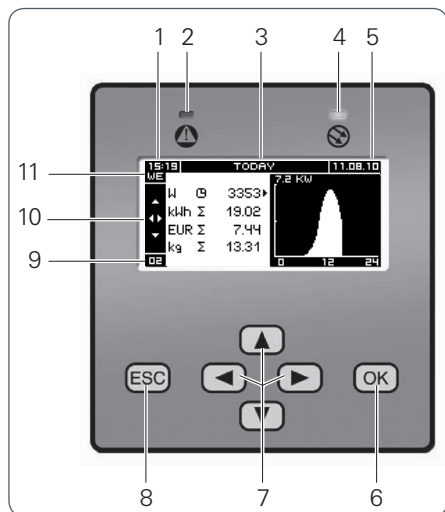
Depending on the requirements of the utility company, the following additional settings need to be made in the service menu; see “**Service menu**” on page 36:

- Phase balancer*
- Grid support
- Power reduction *

* These menus can only be changed 4 hours after initial configuration.

5 Operation

5.1 Display



- (1) Time in 24-hour format
- (2) Alarm LED (red)
- (3) Title of the current screen
- (4) Operation LED (green)
- (5) Date
- (6) OK button
- (7) Navigation buttons
- (8) ESC button
- (9) Inverter number
- (10) Scroll arrows (vertical and horizontal)
- (11) Week day



The scroll arrows show which navigation buttons can be used to navigate on the current screen.

Meaning of the LEDs

Alarm LED (2) (red)

LED off ▪ Normal operation

LED flashes ▪ Error

Operation LED (4) (green)

LED lit up ▪ Feed-in mode

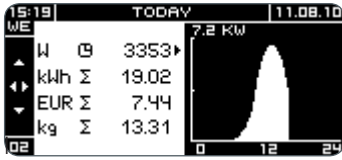
LED flashes ▪ Preparation for feed-in

LED off ▪ Inverter not in feed-in mode

Both LEDs flash at same time

The inverter is running a network scan or making parameter settings.

5.2 Operation display

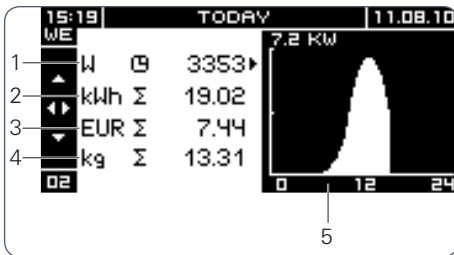


During normal operation, the operating mode is displayed. The power data is shown in a table and graph. In this way, the operation display provides an overview of the feed-in process and the yield of the PV system.

5.2.1 Navigating in the TODAY operation display

- ▼/▲ buttons Switch between "TODAY" and "ACTUAL" operation displays
- ◀/▶ buttons Switch between time periods in the operation display TODAY

5.2.2 TODAY operation display



- (1) Current power
- (2) Total energy fed in today
- (3) Total feed-in rebate generated today
- (4) Total CO₂ saving today
- (5) Feed-in progress today



The values displayed by the inverter may differ from those displayed on calibrated electricity meters.

Display of other time periods

The inverter stores the power data for the total operating time. The following periods can be displayed:

- Today
- Current week
- Current month
- Current year
- Since initial operation
- Yesterday
- Previous week
- Previous month
- Previous year

Differing display in other time periods

- The current power value (W ☺) is only displayed for the TODAY period and if energy is currently being fed in. In all other periods, and when energy is not being fed in, the maximum value (W ↑) is displayed.
- Feed-in rebate >999,000 is displayed exponentially.
 - Example: EUR 1,234,567 is displayed as 1.234E6 ($=1.234 \times 10^6$)
- The progress of the power feed-in is only displayed for the periods TODAY and YESTERDAY. In all other periods, the energy fed in is displayed for each time interval.
 - Each day is represented by one bar in the weekly display (Mon. – Sun.).
 - Each day is represented by one bar in the monthly display (1st – 31st).
 - Each month is represented by one bar in the yearly display (Jan. – Dec.).

5.2.3 ACTUAL operation display

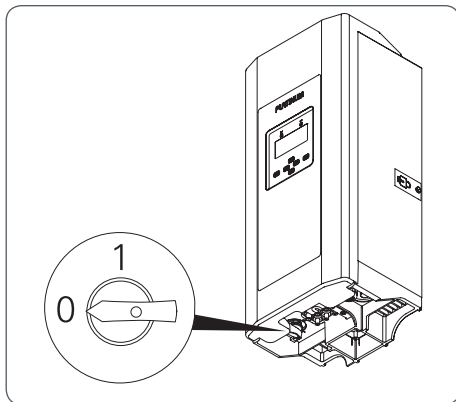
15:26 ACTUAL 11.08.10			
WE			
▲	VOLTAGE	DC 460V	AC 214V
▼	CURRENT	11.5A	24.0A
02	POWER	5328W	5137W

This display shows the actual (current) values for the voltage, current and power on the DC side and on the AC side.

5.3 Isolation from the generator field

On devices with a DC disconnect

The DC disconnect on the underside of the device allows the solar generator to be switched on and off.



Position 0: Solar generator switched off

Position 1: Solar generator switched on



- PLATINUM GmbH recommends activating the DC isolator once a year to prevent the contacts from fusing together.
- PLATINUM GmbH recommends switching off the mains voltage (AC) before switching off the DC isolator to minimise wear to the contacts.

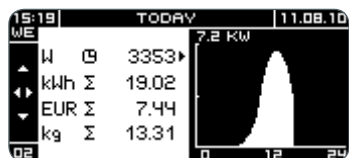
On devices without a DC disconnect

→ Disconnect the DC side from the solar generator using the external isolation device.

6 Menu

6.1 Operate and navigate in the menu

6.1.1 Call up menu



1. Press **ESC** on the operation display.



The main menu is displayed.

OPERATION DISPLAY is selected.

2. Use the ▼/▲ buttons to select the menu required, e.g. SETTINGS.
3. Open the menu selected by choosing **OK**.
The associated submenus are displayed.

6.1.2 Menu operation



The scroll arrows available in the current menu are shown in the black bar on the left.

Button	Meaning
▼/▲	<ul style="list-style-type: none"> Select from a list If entering information: increase/decrease value
◀/▶	<ul style="list-style-type: none"> Switch between alternatives, e.g. YES/NO, BACK/SELECT To the next/previous/higher-level parameter If entering information: to the next/previous digit
ESC	<ul style="list-style-type: none"> Return to the higher-level menu without making any changes
OK	<ul style="list-style-type: none"> Adopt setting and return to the higher-level menu Open selected submenu

6.2 Menu tree

Operation display	See “Display” on page 27		
Settings	Time settings	Date / time	
		Date format	DD-MM-YYYY, MM-DD-YYYY, YYYY-MM-DD
		Daylight saving	Manually, automatically
	Language	Deutsch, English, Italiano, Español, Nederlands, Français	
	Alarm volume	0 ... 3	
	Alarm function	Off, Interval, Continuous, Test	
	LCD	Contrast	0 ... 63
		Brightness	0 ... 9
	Rebate		
	System		
Plant size			
Meter 2			
Information	Operating data		
	System data		
	Inverter type		
	Inverter version		



The menu options are described in tables below.

6.3 SETTINGS menu

Time settings

Date / time	<ul style="list-style-type: none"> Enter date and time in the format shown. If changing to daylight savings time manually, the following prompt appears: DAYLIGHT SAVING YES/NO. <ul style="list-style-type: none"> – YES One hour is added to the time set. – NO The time already set is used. Before the new values are selected, a security prompt is shown. 	
Date format	<ul style="list-style-type: none"> Select date format. Possible date formats: DD-MM-YYYY, MM-DD-YYYY, YYYY-MM-DD	
Daylight saving	MANUALLY	Manually switch between daylight saving/winter time. When the date and time are next entered, the DAYLIGHT SAVING YES/NO prompt appears.
	AUTOMATICALLY	Automatically switch to daylight saving/winter time according to the selected country.



- Changing the date and time can cause saved data to be overwritten or lead to gaps in data logging.
- The inverter transfers the time settings to all network participants automatically.

Language

Deutsch	<ul style="list-style-type: none"> Select the language required. The inverter transfers the language set to all network participants automatically.
English	
Italiano	
Español	
Nederlands	
Français	

Volume

0 ... 3	<ul style="list-style-type: none"> Set the alarm volume for the built-in buzzer on this inverter. Possible values: 0 ... 3 Factory setting: 0 (alarm off)
---------	---

Alarm function

Off	The alarm contact (NO contact) remains constantly open in the event of a safety-related or blocking fault.
Interval	The alarm contact (NO contact) opens and closes periodically in the event of a safety-related or blocking fault.
Duration	The alarm contact (NO open contact) is constantly closed if a safety-related or blocking fault occurs until the fault has been rectified.
Test	Briefly closes the alarm contact for testing purposes if the menu item is selected.

LCD

Contrast	<ul style="list-style-type: none"> Set the display contrast. Possible values: 0 ... 63
Brightness	<ul style="list-style-type: none"> Set the display brightness. Possible values: 0 ... 9

Feed-in rebate

Currency	<ul style="list-style-type: none"> Enter currency of the country, max. three characters.
Value / kWh	<ul style="list-style-type: none"> Enter rebate per fed-in kWh in the format shown.

System

Name	<ul style="list-style-type: none"> Assign the system (network with several inverters) one name (max. 18 characters).
Description	<ul style="list-style-type: none"> Specify the system further by means of a description (max. 18 characters).

Plant size

Power system	<ul style="list-style-type: none"> Enter power installed in the entire network. A security prompt appears: "Plant size ..."
--------------	--

Meter 2

	Meter 2 counts the energy fed in since the last reset.
Back	<ul style="list-style-type: none"> Do not reset meter 2.
Reset	<ul style="list-style-type: none"> Reset meter 2.

6.4 INFORMATION menu

The INFORMATION menu offers the following information screens:

16:44	ENERGY METER	11.08.10
WE		
▲	GENERAL	METER 2
▼	09.02.2005	11.08.2010
	45.862 MWh	13.12 kWh
	20500 h	3 h
02		
	1	2

- (1) Total energy since initial operation date and number of operating hours
- (2) Energy since the last reset and number of operating hours

15:46	SYSTEM	11.08.10
WE		
3 ▲	NAME	PV-SYSTEM
4 ▼	NO. OF PARTICIPANTS	05
	NO. OF INVERTERS	04
02		

- (3) Name and description (if available) of the system
- (4) Number of participants and inverters in the PLATINUM® network

15:30	INFORMATION	11.08.10
WE		
5 ▲	TYPE	7200 TLD
6 ▼		ENS1-DE
7	S/N	1007.100901000
8		VDE-AR-N 4105
02		

- (5) Type information
- (6) ENS version *
- (7) Serial number
- (8) Configured standard

10:40	INFORMATION	25.02.11
FR		
9 ▲	FIRMWARE	V 1.1.0.0
10 ▼	EIA485	V 5.1
02		

- (9) Firmware version
- (10) PLATINUM® Network version

* ENS = Device for monitoring the network with allocated control elements

6.5 Service menu

6.5.1 Call up service menu

1. Call up the main menu with the **ESC** button.
2. Select the **SETTINGS** menu with the **▲/▼** buttons and confirm with **OK**.
3. Hold both the **◀** and **▶** buttons down together for around three seconds.
The service menu is displayed and the **EVENT LIST** menu option is selected.
4. Select the menu required using the **▲/▼** buttons.

6.5.2 Overview of the service menu

Event list	See section 8.2
Parameters	See section 6.5.3
Initial op. date	Show initial operation date
Energy meter	Show energy fed in since initial operation
Reconfiguration	See section 4.3
MPP mode	See section 6.5.4
Grid support	See section 6.5.5
Phase balancer*	See section 6.5.6
Power reduction *	See section 6.5.7



* These menus can only be changed for a period of 4 hours after initial configuration.

6.5.3 Service menu PARAMETERS

In some supply areas, the values for supply voltage and frequency sometimes or always differ from the factory settings. PLATINUM[®] inverters can be adapted to these values. For more information, contact the PLATINUM[®] service.

The PARAMETERS service menu shows the parameters set, the country code and the valid guidelines. The parameters are structured in several levels, with the specific value displayed on the lowest level.

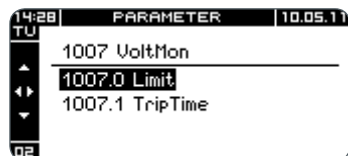


Parameters can only be modified by certified persons with the PLATINUM[®] service tool.

Example: Parameter 1007 VoltMon (voltage monitoring)

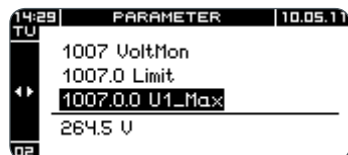


Parameter 1007



Parameter 1007

- with submenus 1007.0 and 1007.1



Parameter 1007,

- with submenus 1007.0 and 1007.0.0
- with the current value for 1007.0.0

6.5.4 Service menu MPP MODE

MPP mode	
Default	▪ Default MPP mode for free module surface
Shadow mode	▪ For systems with shadowing (e.g. through trees), the MPP area is frequently subject to complete scans.



- Shaded systems should also be run initially in the MPP mode NORMAL.
- In the MPP SHADOW mode, the ideal yield may not be achieved because only a low level is fed in during the MPP search.

6.5.5 Service menu GRID SUPPORT

Grid support	
Remote	In this setting, grid support is set by a remote device (e.g. PLATINUM® WebMaster).
Cosine Phi	Enter cosine phi. <ul style="list-style-type: none">▪ Cosine Phi 0.707 ... 1▪ Type Capacitive* (over-excited), inductive* (under-excited)▪ Phi Associated angle
Reactive power	Enter the reactive power. <ul style="list-style-type: none">▪ % P_Nom 0 ... 50▪ Type Capacitive* (over-excited), inductive* (under-excited)▪ Reactive power Associated reactive power
Cosine Phi(P)	In this setting, cosine phi is configured according to the specifications defined in the PLATINUM® inverter.
Q(U)	Voltage-dependent reactive power Centre voltage <ul style="list-style-type: none">▪ Typically 102.0%
Q(U) hysteresis	Q(U) closed-loop control according to the curve saved in the inverter. The curve can be parametrised via the PLATINUM® service tool.

* from the perspective of a meter system

6.5.6 Service menu PHASE BALANCER

The unbalanced load is the difference between the instantaneous AC power levels on the three network phases. Energy providers and network operators specify the maximum permissible unbalanced load for the installation of inverters in different phases of the supply network.

The phase balancer function ensures that the maximum permissible unbalanced load is not exceeded in the following scenarios:

- Failure of an inverter module
- Load-dependent variations in AC power levels



- This menu can only be changed for a period of 4 hours after initial configuration.
- A special phase balancer cable is required in order to adjust the phase balancer; this cable is available as an optional accessory.
- The phase balancer monitors the three different inverters that are connected with the phase balancer cable. Further information can be found in the guide for the phase balancer cable.
- PLATINUM GmbH recommends setting the phase balancer to "Off" (factory setting) and to only activate it at the express request of the energy supplier.

Phase Balancer

Off	The phase balancer is switched off. The unbalanced load is not limited.	
Power Control	Configuring the phase balancer.	
	▪ Max. power	Enter max. permissible unbalanced load in W. Possible settings: 0 W ... max. power
	▪ Reaction time	Enter the reaction time in seconds. Possible settings: 0 ... 3600 seconds Factory setting: 300 seconds
	▪ Power control	Checking and confirmation of the previously chosen settings. The inverter transmits the data to the other two inverters connected to the phase balancer cable. The red and green LEDs flash while the data is being saved.

Phase Balancer

Error Off	In the event of failure of an inverter, the other two inverters connected via the phase balancer are also isolated from the network.
Error Reduce	In the event of failure of an inverter, the other two inverters connected via the phase balancer limit the AC power level to the set unbalanced load.



If the feed-in power of an inverter is reduced due to unbalanced load, no status message is displayed on the inverter.

6.5.7 Service menu POWER REDUCTION



This menu can only be changed for a period of 4 hours after initial configuration.

Power reduction

Maximum power	Enter the maximum power for this inverter according to the specifications of the network operator.
---------------	--

7 Maintenance and cleaning



DANGER

Risk of death due to electric shock!

- ▶ Only allow inverters to be opened by the PLATINUM® service department or by service partners authorised by PLATINUM GmbH.



DANGER

Risk of death due to high DC and AC voltages!

- ▶ Wear insulating protective clothing and face protection.
- ▶ Maintenance and cleaning is to be performed only by trained specialist personnel.
The trained specialist personnel must be granted permission by the energy provider responsible.

Before every maintenance or cleaning task:

- ▶ Switch off mains voltage supply (safety device).
- ▶ Set the switch knob of the DC isolator to 0.
- ▶ Wait at least 40 minutes until the capacitors are discharged.
- ▶ Make sure that no voltage is applied to the DC cables.

7.1 Maintenance



The inverter is maintenance-free.

7.2 Cleaning

CAUTION

Destruction of the inverter!

- ▶ The inverters must not be cleaned with a steam cleaner.

To ensure cooling, clean the ventilation slots regularly with

- a vacuum cleaner
- soft brush
- pressured air

8 Errors and troubleshooting

8.1 Error display

Three different types of error are displayed on the inverter:

- Serious errors
- Blocking errors
- Non-blocking errors



As long as an error is displayed, the event list can be called up by pressing the ► button; see 36.

8.1.1 Serious errors

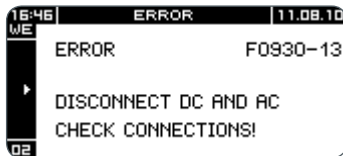


WARNING

Destruction of the inverter due to serious error!

- Switch off AC voltage.
- Switch off DC voltage: Set DC isolator to 0.
- Inform the PLATINUM® service department. Have the error code and serial number to hand.

Example of a serious error



When a serious error is displayed:

1. Follow the instructions on the inverter.
2. To exit the error display, press the ► button.
The event list is displayed.
3. Exit the event list by pressing the **ESC** button.

8.1.2 Blocking errors

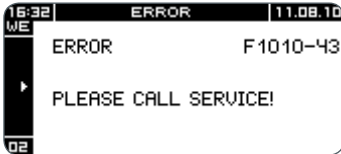


DANGER

Risk of death due to electric shock!

- ▶ Blocking errors are only to be rectified by service partners authorised by PLATINUM GmbH.

Example of a blocking error



- The inverter is permanently switched off.
- The inverter raises a visual alarm (red LED flashes).
- The inverter raises an acoustic alarm.

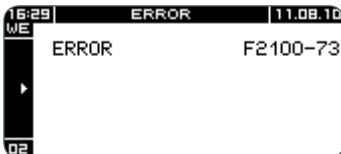
When a blocking error is displayed:

1. Follow the instructions on the inverter.
2. To stop the acoustic alarm, press any button.
3. To exit the error display, press the ▶ button.
The event list is displayed.
4. Exit the event list by pressing the **ESC** button.
The initial operation screen is displayed. The red LED continues to flash as long as the error remains.

8.1.3 Non-blocking errors and warnings

Non-blocking errors occur temporarily (e.g. overvoltage on the grid). The inverter switches off automatically and remains switched off until the cause of the error no longer exists. Once the error has been rectified, the inverter automatically reverts to normal operation.

Example of a non-blocking error



The red LED flashes at the same time as long as the error exists.

Stop alarm

1. To exit the error display, press the ▶ button.
The event list is displayed.
2. Exit the event list by pressing the **ESC** button.

8.2 Event list

The “Event List” in the service menu (see “Service menu” on page 36) displays the last 100 events detected.

Structure of the event list

14:33 WE	EVENT LIST				11.08.10
▲	001	11.08.10	14:29	F1300-43	(1) Sequential numbers
	002	11.08.10	14:29	W4090-A3	(2) Date
▶	003	11.08.10	14:29	F2010-73	(3) Time
▼	004	11.08.10	14:29	E4020-D3	(4) Event code
	005	11.08.10	14:29	E4010-D1	
02	1	2	3	4	



The complete event list can be downloaded from our website www.platinum-nes.com.



When making contact with the PLATINUM® service department, have the serial number and event code to hand.

No.	Meaning	Measure
Serious errors		
900	AC voltage too high	<ul style="list-style-type: none">▪ Isolate inverter from network▪ Check AC voltage connection
910	DC voltage too high	<ul style="list-style-type: none">▪ Isolate inverter from network▪ Isolate inverter from DC voltage connection▪ Check inverter for damage▪ Check the module connections
920	Reverse polarity at DC voltage connection	<ul style="list-style-type: none">▪ Set DC disconnect to 0▪ Check DC voltage connection
930	Isolation error between PV+ and earth / PV– and earth	<ul style="list-style-type: none">▪ Check isolation of PV modules▪ Check isolation of PV cables▪ AC installation (check N and PE)

No.	Meaning	Measure
Blocking errors		
1000 ... 1030	Blocking system error	<ul style="list-style-type: none"> Isolate inverter from network and from DC generator Put inverter back into operation <p>If measures prove unsuccessful:</p> <ul style="list-style-type: none"> Inform service
1040	DC voltage too high	<ul style="list-style-type: none"> Check module connection
1050	Reverse polarity at DC voltage connection	<ul style="list-style-type: none"> Set DC disconnect to 0 Check DC voltage connection
1060 ... 1290	Blocking system error	<ul style="list-style-type: none"> Isolate inverter from network and from DC generator Put inverter back into operation <p>If measures prove unsuccessful:</p> <ul style="list-style-type: none"> Inform service
1300	L and N connections mixed up	<ul style="list-style-type: none"> Check L and N at the AC voltage connection
1310 ... 1990	System error	<ul style="list-style-type: none"> Isolate inverter from network and from DC generator Put inverter back into operation <p>If measures prove unsuccessful:</p> <ul style="list-style-type: none"> Inform service
Non-blocking errors		
2010	Amplitude limit for feed-in phase exceeded or undershot	<ul style="list-style-type: none"> Arrange for voltage amplitude of feed-in phase to be checked
2020 ... 2040	Grid amplitude error phase-to-phase voltage	<ul style="list-style-type: none"> Ensure that all safety devices are switched on Ensure that all three phases are connected
2080	Network fault on feed-in phase (voltage peak)	<p>If this occurs frequently:</p> <ul style="list-style-type: none"> Arrange for all contacts and safety devices to be checked, from the service connection to the inverter Arrange for the network quality to be checked

No.	Meaning	Measure
2100 2110	Mains frequency limit exceeded or undershot	If the inverter is supplied with emergency power from a different mains frequency: <ul style="list-style-type: none"> ▪ No measures required
2120 ... 2190	Diagnosis support in service situation	<ul style="list-style-type: none"> ▪ Inform service of error code if required
2200 ... 2240	Measured temperature too high	<ul style="list-style-type: none"> ▪ Check ventilation openings
2300 ... 2330	Temperature sensor defective	<ul style="list-style-type: none"> ▪ Inform service
2340 ... 2890	Diagnosis support in service situation	<ul style="list-style-type: none"> ▪ Inform service of error code if required
2900	Subsequent error during network fault or excess temperature	<ul style="list-style-type: none"> ▪ No measures required
2910 ... 2990	Diagnosis support in service situation	<ul style="list-style-type: none"> ▪ Inform service of error code if required
Warnings		
3000 ...	Diagnosis support in service situation	<ul style="list-style-type: none"> ▪ Inform service of error code if required
3990	The inverter stores the warning in the event list	
Information		
4000 ...	Diagnosis support in service situation	<ul style="list-style-type: none"> ▪ Inform service of error code if required
4990	The inverter stores the warning in the event list	

9 Technical data

Input variables	3800TL	3801 TL
Max. PV power	4,300 Wp	4,000 Wp
Max. DC power ($\cos \varphi = 1$)	3,800 Wp	3,480 Wp
MPPT voltage range	350 – 710 V	349 – 710 V
Max. input voltage	880 V	
Max. MPPT input current	11.5 A	10.5 A
Number of string inputs	1	1
Number of MPP trackers	1	
Short circuit current	16 A	15 A
Output variables	3800TL	3801 TL
Nominal power ($\cos \varphi = 1$)	3,680 W	3,330 W
Nominal current	16.0 A	14.5 A
Max. apparent power	3,680 VA	3,330 VA
Max. AC current	16.0 A	14.5 A
Fuse protection on the AC side	20 A	20 A
Min. start power	7 W	7 W
Mains output voltage / mains frequency	230 V (+/- 20%) / 50 Hz (+/- 5%)	
Feed-in / monitoring phases	1 / 1 or 3	
Max. network impedance permitted (Z_{\max})	n/a	
Standby consumption	<2 W	
Short-circuit strength	Yes	
Power factor ($\cos \varphi$)	0.7 ind. ... 0.7 cap.	
Max. short circuit current (max. duration 5 ms)	<100 A	
Max. switch-on current	<20 A	
Efficiency	3800TL	3801 TL
Max. efficiency	97.7%	97.7%
Euro efficiency	97.4%	97.4%
Type name	3800TLD	3801TLD

4300TL	4800TL	5300TL	6300TL	7200TL
4,900 Wp	5,400 Wp	6,000 Wp	7,100 Wp	8,000 Wp
4,300 Wp	4,800 Wp	5,300 W	6,300 W	7,200 W
351 – 710 V	348 – 710 V	349 – 710 V	350 – 710 V	351 – 710 V
880 V				
13 A	14.5 A	16.0 A	18.5 A	21.0 A
1	1	1	2	2
1				
18 A	20 A	22 A	26 A	29 A
4300TL	4800TL	5300TL	6300TL	7200TL
4,120 W	4,600 W	5,000 W	6,000 W	6,900 W
17.9 A	20.0 A	21.7 A	26.1 A	30.0 A
4,120 VA	4,600 VA	5,000 VA	6,000 VA	6,900 VA
17.9 A	20.0 A	21.7 A	26.1 A	30.0 A
25 A	25 A	32 A	32 A	32 A
7 W	7 W	7 W	8 W	8 W
230 V (+/- 20%) / 50 Hz (+/- 5%)				
1 / 1 or 3				
424 mΩ	379 mΩ	349 mΩ	290 mΩ	253 mΩ
<2 W				
Yes				
0.7 ind. ... 0.7 cap.				
<100 A				
<20 A				
4300TL	4800TL	5300TL	6300TL	7200TL
97.7%	97.7%	97.7%	98.0%	98.0%
97.4%	97.4%	97.4%	97.5%	97.5%
4300TLD	4800TLD	5300TLD	6300TLD	7200TLD

Interfaces	...TL
DC isolation device	Optional switch integrated in device for isolation from generator field
DC input	DC connector, Multi-Contact MC4
AC output	Spring terminal
PLATINUM® Network	EIA 485, 2 x RJ45 Western Modular, screw terminals
Service interface	EIA 232, D-sub 9-pin socket
Potential-free contact	1 changeover contact, max. 24 V AC / 2 A, screw terminals
Ambient conditions	...TL
Operating temperature range	–20 °C to +60 °C
Max. temperature for rated power	+45 °C
Storage temperature	–20 °C to +80 °C
Rel. Humidity	Max. 95%
Protection class (with the exclusion of the digital interface)	IP66 in accordance with DIN EN 60529
Level of contamination	II, external and internal use possible

Inverter data	...TL
Weight	
▪ 3800 TL, 3801 TL, 4300 TL	27 kg
▪ 4800 TL, 5300 TL	28 kg
▪ 6300 TL, 7200 TL	29 kg
Dimensions (H x W x D)	720 x 320 x 250 mm
Overvoltage category	DC side: II AC side: III
Reverse voltage protection (DC)	Yes
Ground fault monitoring	DC side: Isolation check AC side: AFI
Protection class / overvoltage protection	I / III
Optical display	Full graphic LCD, 170 x 76 pixels
Integrated datalogger	Storage capacity sufficient for operating time of 30 years
Switching concept	Transformerless, DIVE, RAC-MPP® technology
Cooling concept	
▪ 3800 TL, 3801 TL, 4300 TL, 4800 TL	Convection cooling
▪ 5300 TL, 6300 TL, 7200 TL	Fan



The technical data is valid for a maximum height of 2,000 m above sea level.

10 Taking out of operation



DANGER

Risk of death due to high DC and AC voltages!

- ▶ Wear insulating protective clothing and face protection.
- ▶ Inverters are only to be uninstalled by trained specialist personnel.
The trained specialist personnel must be granted permission by the energy provider responsible.
- ▶ Switch off mains voltage supply (safety device).
- ▶ Set the switch knob of the DC isolator to 0.
- ▶ Wait at least 40 minutes until the capacitors are discharged.
- ▶ Make sure that no voltage is applied to the DC cables.



WARNING

Injury may result if the inverter falls!

- ▶ Get a second person to help with assembly and disassembly.
- ▶ Wear safety shoes during assembly and disassembly.
- ▶ Ensure that the inverter is positioned securely.



The procedure for taking inverters out of operation is the reverse of that for installation and assembly.

11 Disposal



- Packaging and replaced parts are to be disposed of in accordance with the regulations of the country in which the inverter was installed.
- Do not dispose of PLATINUM[®] inverters in household waste.



- PLATINUM[®] inverters can be fully returned to PLATINUM GmbH at the end of their service life.
- PLATINUM[®] inverters can be disposed of via municipal waste management for electrical devices.

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