

**SmartLogger3000**

# **Export Limitation Configuration Guide**

<b>Issue</b>	04
<b>Date</b>	2022-10-24



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# Preface

## Purpose

This document applies to the SmartLogger3000 data collector series (SmartLogger for short). Read this document before you use the SmartLogger. As a dedicated platform for photovoltaic (PV) power system monitoring and management, the SmartLogger implements the interface convergence, protocol conversion, data collection, data storage, centralized monitoring, intelligent maintenance, and remote networking functions for devices in a PV power system.

This manual describes the operation and maintenance instructions of the export limitation function.




## Intended Audience



This document is intended for :

- Technical support engineers.
- Maintenance engineers.

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Symbol	Description
	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results.  NOTICE is used to address practices not related to personal injury.
 NOTE	Supplements the important information in the main text.  NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Change History

Issue	Date	Description
04	2022-10-24	Change the default value of communication disconnection detection time to 3
03	2022-08-01	Added the empirical parameters of the YDS60-80 meter.
02	2020-10-31	Update the description of "Start control" paramter.
01	2020-07-29	This issue is the first official release.

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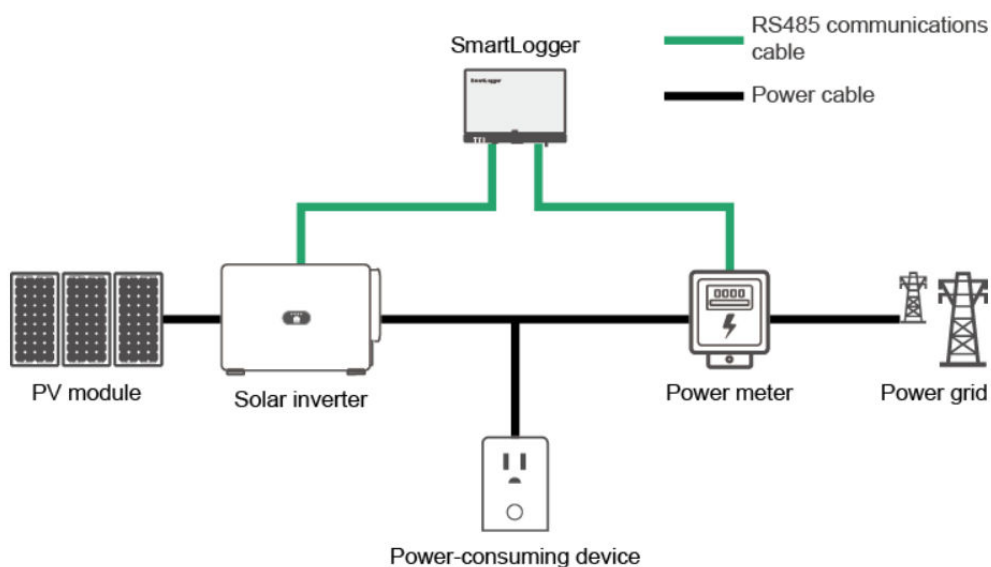
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# 1 System Network Diagrams

The Export Limitation feature is mainly used in the self-use scenario. The SmartLogger detects the active power of the grid-tied point electric meter, controls the active output of the inverter in a closed-loop manner, prevents the inverter output power from being transmitted to the power grid, and maximizes the inverter power generation for local load consumption.

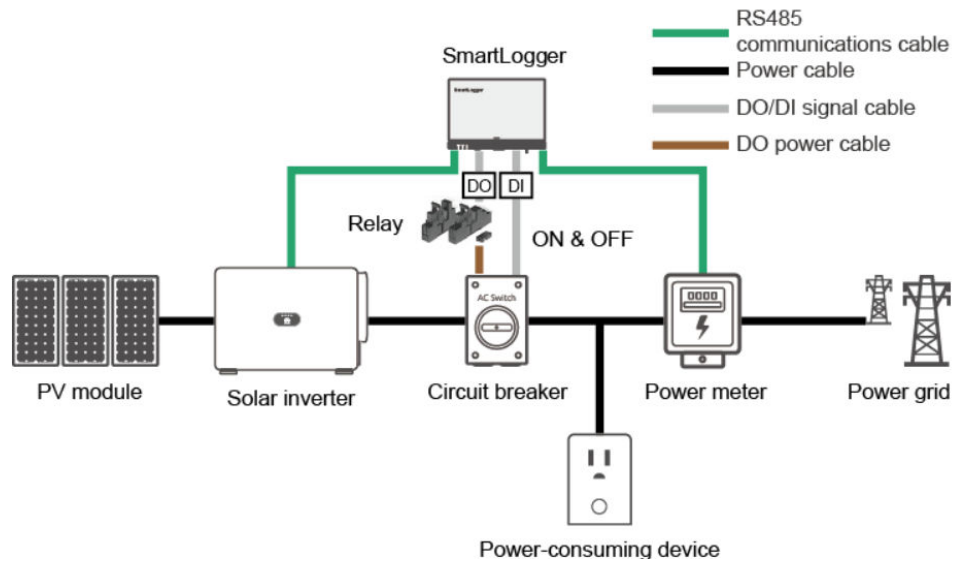
## Without the DO control circuit breaker

Figure 1-1



## With the DO control circuit breaker

Figure 1-2

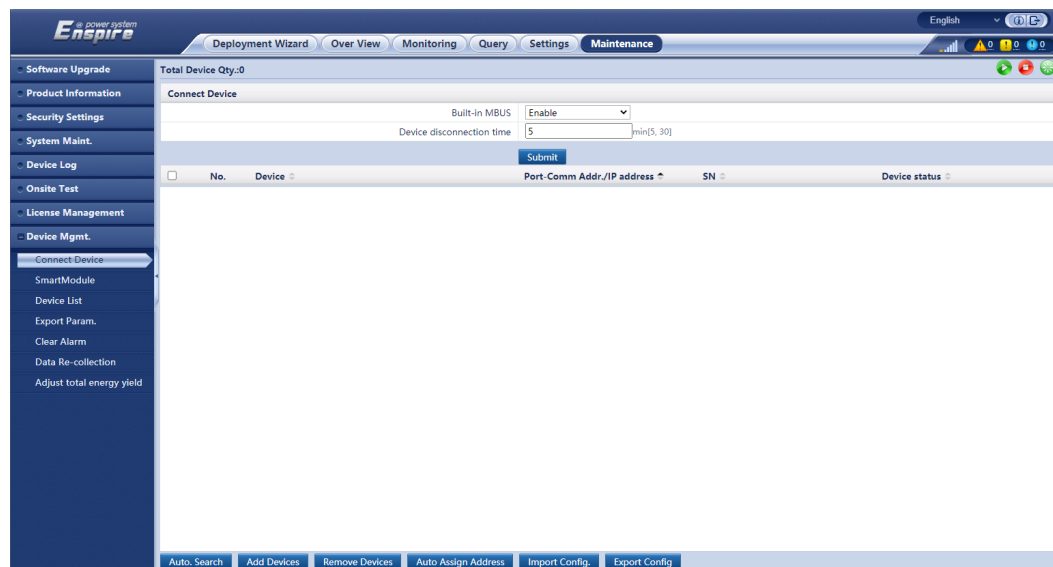


#### NOTICE

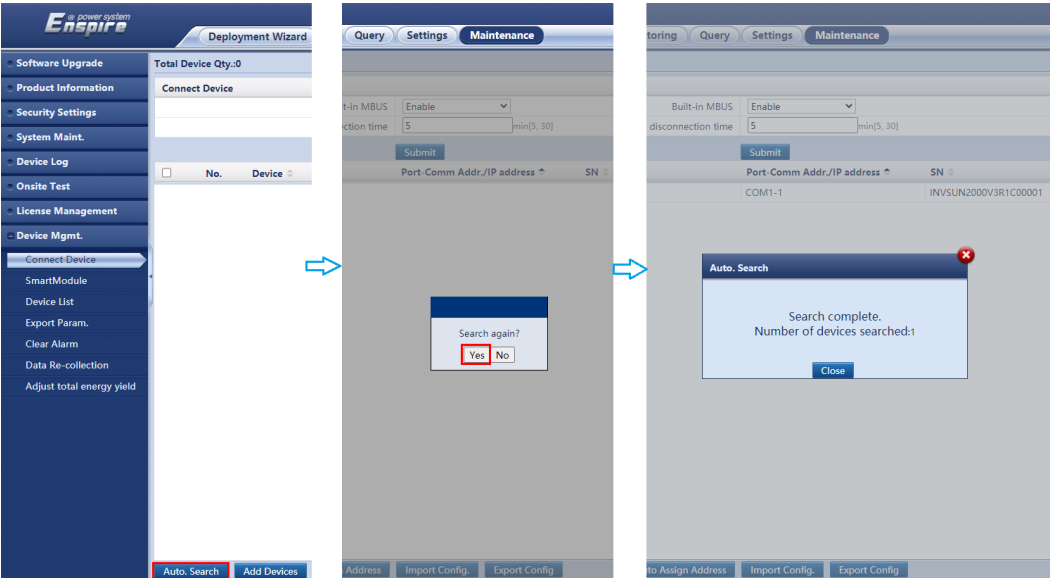
Pay attention to the power supply position of the SmartLogger. Avoid powering off the SmartLogger after the DO control circuit breaker is switched off.

# 2 Connecting to the Inverter

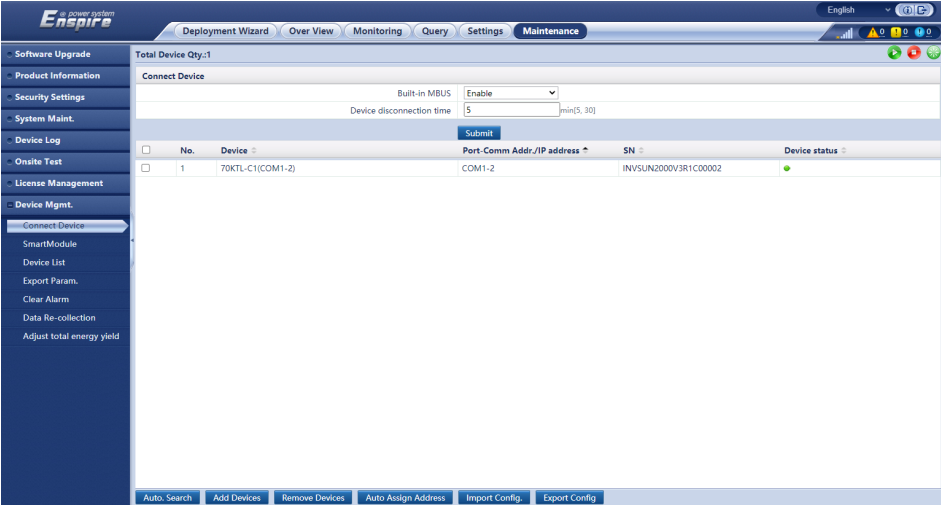
**Step 1** Log in as **admin**. Choose **Maintenance** > **Connect Device** to access the target page, as shown in the following figure.



**Step 2** Automatically search for inverters:



**Step 3 Search result:**



----End

# 3 Configuring Export Limitation Feature

## 3.1 Wizard Configuration

## 3.2 General Configuration

## 3.1 Wizard Configuration

### 3.1.1 Step 1 Connecting to the Power Meter

Log in as **admin**. Choose **Settings > Power Adjustment > Export Limitation** to access the target page. Manually add a power meter after correctly setting parameters. Then click the **Next** button.

The screenshot shows the 'Export Limitation' configuration page in the SmartLogger3000 web interface. The page is divided into three main sections:

- Modbus RTU**: Contains fields for Port (COM1), Baud rate (9600), Parity (None), Stop Bit (1), and Address (1). There is an 'Add Devices' button.
- Power Meter Running Parameters**: Contains fields for Device (Meter(COM1-1)), Intelligent Power Meter Type (Acrel-P296L), Voltage change ratio (1.0), Current change ratio (1.0), and Meter usage (Export+Import meter). There is a 'Submit' button.
- Power Meter Running Information**: A table showing the status of the power meter.

Signal Name	Value	Unit
Device status	NA	
Meter usage	NA	
Line voltage between phases A and B	NA	V
Line voltage between phases B and C	NA	V
Line voltage between phases C and A	NA	V

At the bottom right, there is a 'Next' button. The footer of the page includes the time 'Time: 2014-12-02 22:18', the user 'User: dispatch', and the copyright notice 'Copyright © Huawei Technologies Co., Ltd. 2020. All rights reserved.'

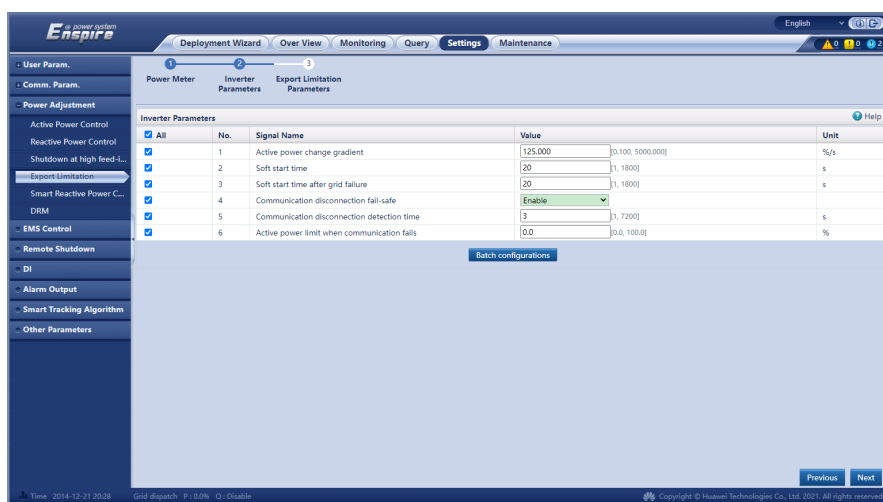
**NOTE**

- If the connected power meter model is UMG604, PD510, PZ96L, UPM209, or COUNTIS E43, select the corresponding model in the **Intelligent Power Meter** Type drop-down list box.
- When the UPM209 or COUNTIS E43 power meter is connected to the SmartLogger, a 120-ohm resistor needs to be connected to the RS485 bus of the meter. For details, see the user manual of the power meter.
- COUNTIS E43:Not applicable to Load Imbalance.
- The meter which used for **Export Limitation**, set the "**Meter usage**" to "**Export + import meter**". Each array allows only one export+import meter to be connected.

## 3.1.2 Step 2 Configuring Inverter Parameters

If Figure 3-2 does not have **Communication disconnection fail-safe** and **Communication disconnection detection time** and **Fail-safe power threshold**.Please refer to Figure 3-3.After the inverter parameters are correctly configured,then click the **Next** button.

Figure 3-1



The following table lists the recommended parameter settings.

Table 3-1

Parameter	Recommended Value	Description
Active power change gradient	125%/s,If the maximum value range is 50%/s, set this parameter to 50%/s.	
Soft start time	20	
Soft start time after grid failure	20	
Communication disconnection fail-safe	Enable	

Parameter	Recommended Value	Description
Communication disconnection detection time	3	Under the Spanish RD1699 grid standard, it is recommended to set it to 1S.
Fail-safe power threshold	0	
Plant active power gradient	0	

Figure 3-2

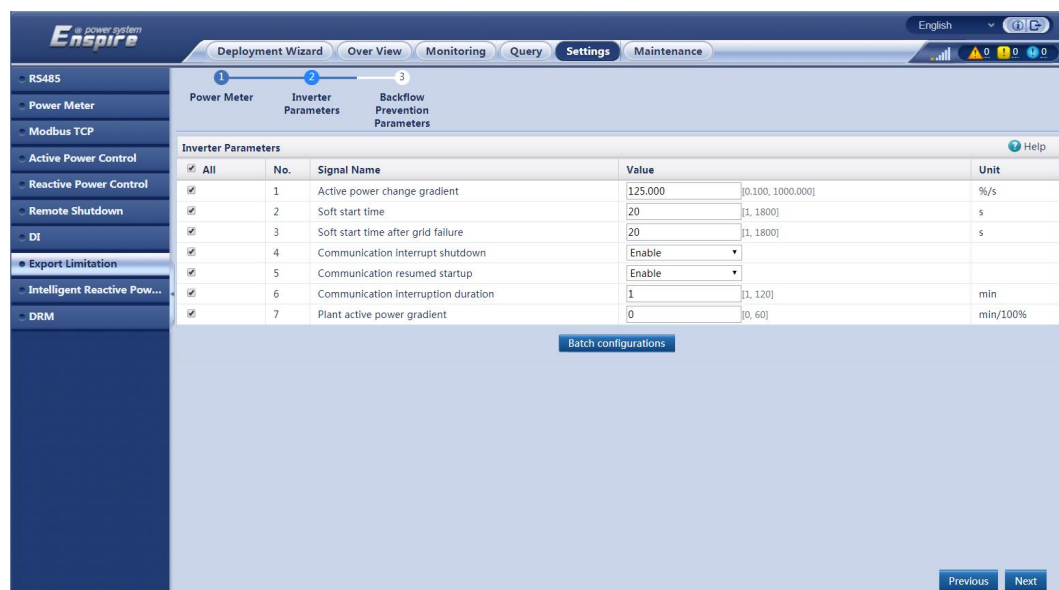


Table 3-2

Parameter	Recommended Value
Active power change gradient	125%/s, If the maximum value range is 50%/s, set this parameter to 50%/s.
Soft start time	20
Soft start time after grid failure	20
Communication interrupt shutdown	Enable
Communication resumed startup	Enable
Communication interruption duration	1
Plant active power gradient	0

### 3.1.3 Step 3 Configuring Export Limitation Parameters

If the DO switch-on/off operations are not involved, ignore the switch-on/off configurations.

Figure 3-3

- Parameter Configuration

Parameter	Value Range	Default Value	Description
Start control	Yes/No	No	Enable/Disable Export Limitation feature. Set this parameter to Yes. Otherwise, the export limitation feature does not take effect.
Electric meter power direction	Positive/Reverse	Reverse	Set this parameter to <b>Positive</b> if the active power reading of the power meter is positive when the inverter has no power output. Otherwise, set this parameter to <b>Reverse</b> .

Parameter	Value Range	Default Value	Description
Limitation mode	Total power/ Single-phase power	Total power	Total power: Backflow prevention for the total power of the grid-tied point.  Single-phase power: Backflow prevention for each phase of the grid-tied point. (COUNTIS E43:Not applicable to Load Imbalance.)
Maximum grid feed-in power	(0.000, 1000.000)kW	0.000kW	Maximum output power of the inverter to the power grid  Suggestion: Set this parameter according to the threshold allowed by the local power company.
Power lowering adjustment period	(0.2,300.0)s	0.5s	Inverter output power lowering period. Refer to <b>Empirical Parameters</b> .  (If it is consistent with <b>Maximum protection time</b> , the power can be lowered for 100% in a single step.)

Parameter	Value Range	Default Value	Description
Maximum protection time	(3.0,300.0)s	3.0s	<p>The maximum duration of the inverter output power to the power grid exceeding the preset threshold detected by the SmartLogger. If <b>Switch-off with 0% power limit</b> is enabled, DO switch-off is triggered. This parameter is used with <b>Power lowering adjustment period</b>. Refer to <b>Empirical Parameters</b>.</p> <p>Suggestion: Set this parameter according to the maximum duration allowed by the local power company.</p>
Power raising threshold	(0.001, 50.000)kW	5.000kW	Inverter output power raising threshold.The recommended setting is 1%~2%Pn.
Fail-safe power threshold	(0.0, 100.0)%	100.0%	Inverter output power percentage controlled by the SmartLogger when communication between the SmartLogger and the power meter is abnormal.

Parameter	Value Range	Default Value	Description
Switch-off with 0% power limit	Enable/Disable	Disable	Enables or disables DO switch-off. The default value is <b>Disable</b> . When enabled and the power is limited to 0%, the DO performs the corresponding action (the hold time is 5 seconds) if the current reverse flow does not disappear after 5 seconds.
Switch-off control port	No/DO1/DO2/DO3	No	Set the Switch-off control port based on actual cable connection.
Switch-on control port	No/DO1/DO2/DO3	No	Set the Switch-on control port based on actual cable connection.
Switch-off state feedback port	No/DI1/DI2/DI3/DI4	No	Set the Switch-off state feedback port based on actual cable connection.
Switch-on state feedback port	No/DI1/DI2/DI3/DI4	No	Set the Switch-on state feedback port based on actual cable connection.

- **Empirical Parameters**

Meter Model	Power Lowering Adjustment Period	Maximum Protection Time	Description
UMG	0.5s	3s	
COUNTIS E43	0.5s	3s	

Meter Model	Power Lowering Adjustment Period	Maximum Protection Time	Description
UMP209	0.5s	3s	
CHNT DTSU666-H	0.5s	3s	Under the Spanish RD1699 grid standard, please set Power Lowering Adjustment Period 0.8s, Maximum Protection Time 2s
YDS60-80	0.8s	2s	The maximum protection time must be adjusted based on local policies.

The preceding parameters are tested in a lab environment and can be preferentially used for configuration and commissioning onsite. They may need to be adjusted based on the actual situation.

## 3.2 General Configuration

### 3.2.1 Step 1 Connecting to the Power Meter

Log in as **admin**. Choose **Deployment Wizard** > **Power Meter** to access the target page. Manually add a power meter after correctly setting parameters.

The screenshot displays the 'Power Meter' configuration page within the 'Deployment Wizard'. The interface includes a sidebar with navigation options like 'Basic parameters', 'Huawei Devices', 'EMI', 'Huawei NMS', 'Third-party NMS', and 'Third-party Devices'. The main content area is divided into several sections:

- Modbus RTU**: Contains fields for Port (COM1), Protocol (Modbus), Baud rate (9600), Parity (None), Stop Bit (1), and Address (1, 247). An 'Add Devices' button is present.
- Power Meter Running Parameters**: Includes fields for Device (Meter(COM1-1)), Intelligent Power Meter Type (Acrel-PZ96L), Voltage change ratio (1.0), Current change ratio (1.0), and Meter usage (Export+Import meter). A 'Submit' button is located at the bottom of this section.
- Power Meter Running Information**: A table showing signal names, values, and units.
 

Signal Name	Value	Unit
Device status	Disconnection	
Meter usage	Export+Import meter	
Line voltage between phases A and B	NA	V
Line voltage between phases B and C	NA	V

At the bottom of the page, there are 'Previous', 'Next', and 'Skip' buttons, along with a copyright notice for Huawei Technologies Co., Ltd. 2020.

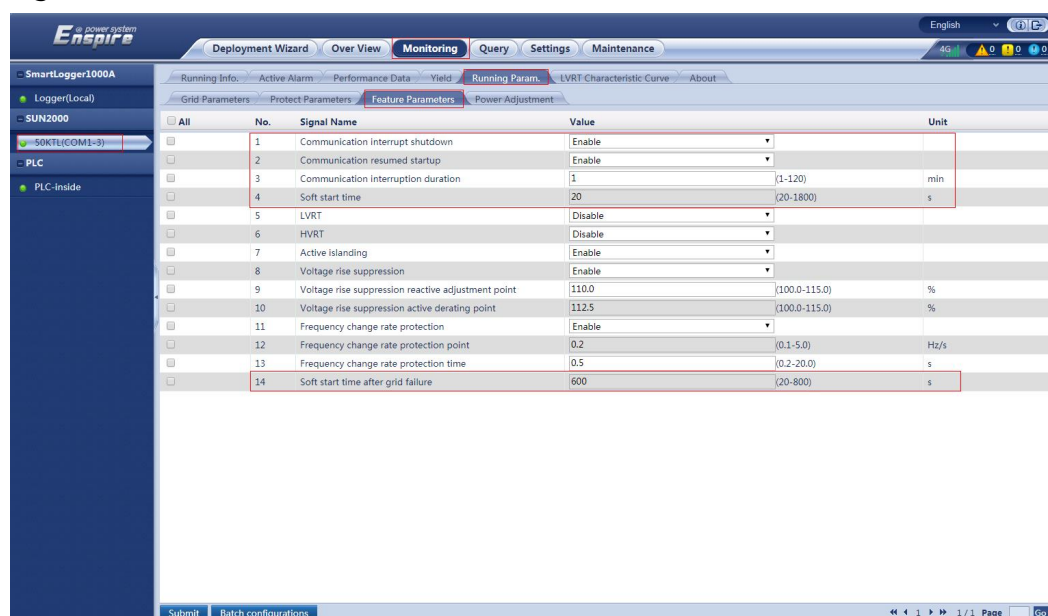
**NOTE**

- If the connected power meter model is UMG604, PD510, PZ96L, UPM209, or COUNTIS E43, select the corresponding model in the **Intelligent Power Meter** Type drop-down list box.
- When the UPM209 or COUNTIS E43 power meter is connected to the SmartLogger, a 120-ohm resistor needs to be connected to the RS485 bus of the meter. For details, see the user manual of the power meter.
- COUNTIS E43: Not applicable to Load Imbalance.
- The meter which used for **Export Limitation**, set the "**Meter usage**" to "**Export + import meter**". Each array allows only one export+import meter to be connected.

## 3.2.2 Step 2 Configuring Inverter Parameters

Log in as **admin**. Choose **Monitoring** > **SUN2000** > **Running Param.** > **Feature Parameters** to access the target page.

Figure 3-4



The following table lists the recommended parameter settings. For multiple inverters, use Batch configurations.

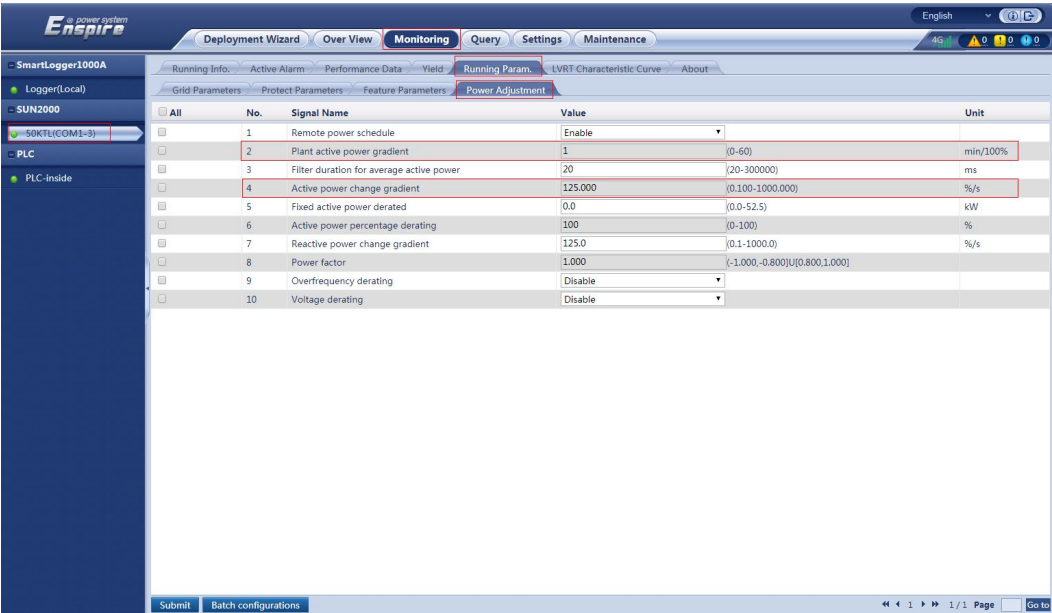
Table 3-3

Parameter	Recommended Value
Communication interrupt shutdown	Enable
Communication resumed startup	Enable
Communication interruption duration	1
Soft start time	20
Soft start time after grid failure	20

### 3.2.3 Step 3 Configuring the Active Power Change Gradient

Log in as **admin**. Choose **Monitoring** > **SUN2000** > **Running Param.** > **Power Adjustment** to access the target page.

Figure 3-5



The following table lists the recommended parameter settings. For multiple inverters, use Batch configurations.

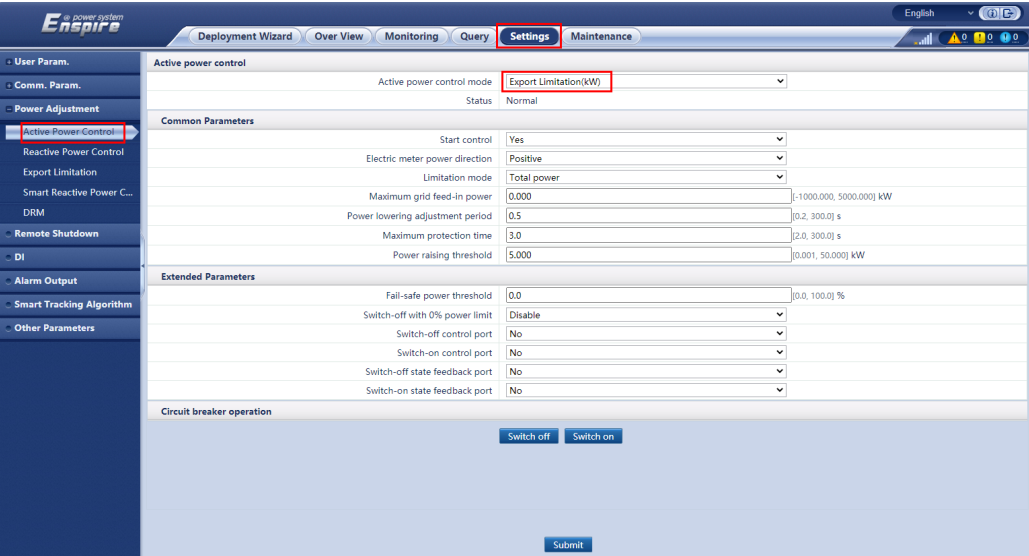
Table 3-4

Parameter	Recommended Value
Plant active power gradient	0
Active power change gradient	125%/s, If the maximum value range is 50%/s, set this parameter to 50%/s.

### 3.2.4 Step 4 Configuring Export Limitation Parameters

Log in as **admin**. Choose **Settings** > **Power Adjustment** > **Active Power Control** to access the setting page. If the DO switch-on/off operations are not involved, ignore the switch-on/off configurations.

Figure 3-6



● Parameter Configuration

Parameter	Value Range	Default Value	Description
Start control	Yes/No	No	Enable/Disable Export Limitation feature. Set this parameter to Yes. Otherwise, the export limitation feature does not take effect.
Electric meter power direction	Positive/Reverse	Reverse	Set this parameter to <b>Positive</b> if the active power reading of the power meter is positive when the inverter has no power output. Otherwise, set this parameter to <b>Reverse</b> .

Parameter	Value Range	Default Value	Description
Limitation mode	Total power/ Single-phase power	Total power	Total power: Backflow prevention for the total power of the grid-tied point.  Single-phase power: Backflow prevention for each phase of the grid-tied point.  (COUNTIS E43:Not applicable to Load Imbalance.)
Maximum grid feed-in power	(0.000, 1000.000)kW	0.000kW	Maximum output power of the inverter to the power grid  Suggestion: Set this parameter according to the threshold allowed by the local power company.
Power lowering adjustment period	(0.2,300.0)s	0.5s	Inverter output power lowering period. Refer to <b>Empirical Parameters</b> .  (If it is consistent with <b>Maximum protection time</b> , the power can be lowered for 100% in a single step.)

Parameter	Value Range	Default Value	Description
Maximum protection time	(3.0,300.0)s	3.0s	<p>The maximum duration of the inverter output power to the power grid exceeding the preset threshold detected by the SmartLogger. If <b>Switch-off with 0% power limit</b> is enabled, DO switch-off is triggered. This parameter is used with <b>Power lowering adjustment period</b>. Refer to <b>Empirical Parameters</b>.</p> <p>Suggestion: Set this parameter according to the maximum duration allowed by the local power company.</p>
Power raising threshold	(0.001, 50.000)kW	5.000kW	Inverter output power raising threshold.The recommended setting is 1%~2%P <sub>n</sub> .
Fail-safe power threshold	(0.0, 100.0)%	100.0%	Inverter output power percentage controlled by the SmartLogger when communication between the SmartLogger and the power meter is abnormal.

Parameter	Value Range	Default Value	Description
Switch-off with 0% power limit	Enable/Disable	Disable	Enables or disables DO switch-off. The default value is <b>Disable</b> . When enabled and the power is limited to 0%, the DO performs the corresponding action (the hold time is 5 seconds) if the current reverse flow does not disappear after 5 seconds.
Switch-off control port	No/DO1/DO2/DO3	No	Set the Switch-off control port based on actual cable connection.
Switch-on control port	No/DO1/DO2/DO3	No	Set the Switch-on control port based on actual cable connection.
Switch-off state feedback port	No/DI1/DI2/DI3/DI4	No	Set the Switch-off state feedback port based on actual cable connection.
Switch-on state feedback port	No/DI1/DI2/DI3/DI4	No	Set the Switch-on state feedback port based on actual cable connection.

- **Empirical Parameters**

Meter Model	Power Lowering Adjustment Period	Maximum Protection Time	Description
UMG	0.5s	3s	
COUNTIS E43	0.5s	3s	

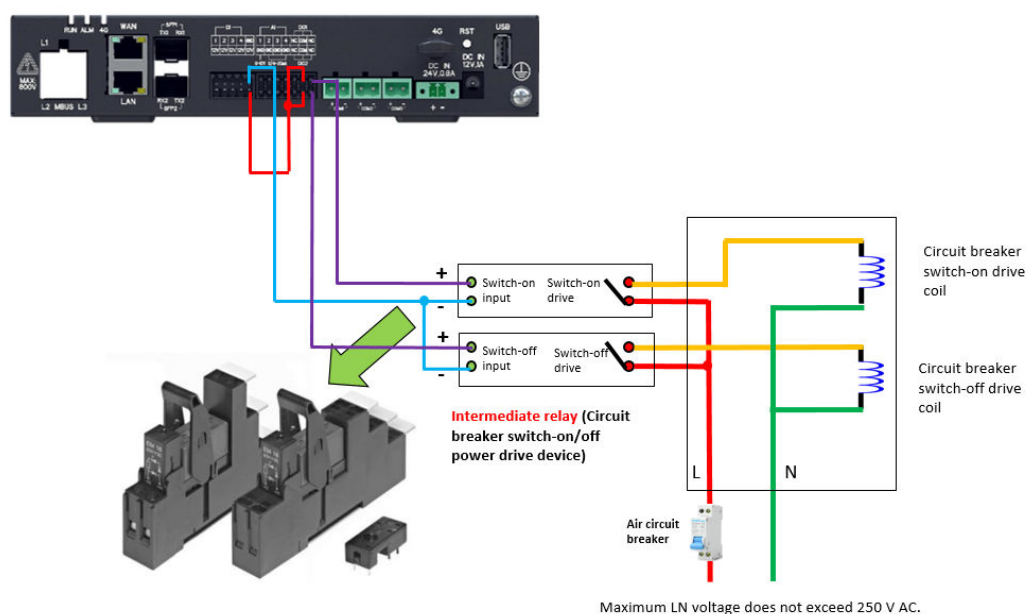
Meter Model	Power Lowering Adjustment Period	Maximum Protection Time	Description
UMP209	0.5s	3s	
CHNT DTSU666-H	0.5s	3s	Under the Spanish RD1699 grid standard, please set Power Lowering Adjustment Period 0.8s, Maximum Protection Time 2s

The preceding parameters are tested in a lab environment and can be preferentially used for configuration and commissioning onsite. They may need to be adjusted based on the actual situation.

# 4 Circuit Breaker Control

- The following figure shows the circuit breaker drive wiring diagram for the SmartLogger1000A. DO1 is used as an example.

Figure 4-1

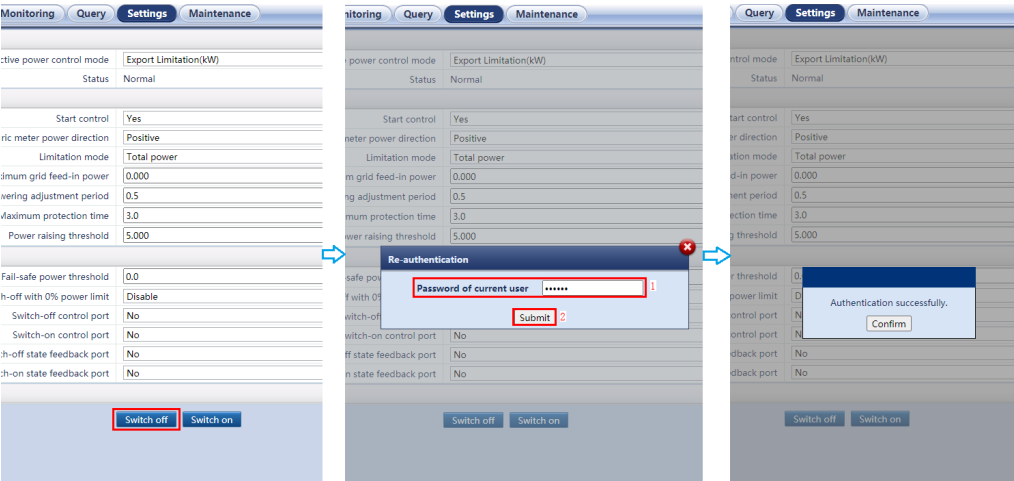


- DO1 on the SmartLogger3000 is used to control the switch-off output. The NO port of DO1 is connected to relay +, and the COM port is connected to 12 V power supply +. The NO contact of the intermediate relay is connected to the circuit breaker switch-off coil.
- DI1 on the SmartLogger3000 is used to detect the switch-off status and is connected to the circuit breaker switch-off status output. DI2 is used to check the switch-on status and is connected to the circuit breaker switch-on status output. GND is connected to the common end of the circuit breaker.
- DO2 on the SmartLogger3000 is used to control the switch-on output. It is wired in the same way as DO1. The difference is that the NO contact of the intermediate relay is connected to the circuit breaker switch-on coil.

**NOTICE**

- 1、The intermediate relay uses a 12 V drive coil, the contact supports 250 V AC @ 10 A or higher, and the relay is installed with a base and guide rail.
- 2、The intermediate relay and external power adapter are configured by the customer and are not provided by Huawei.
- Switch-off control test:

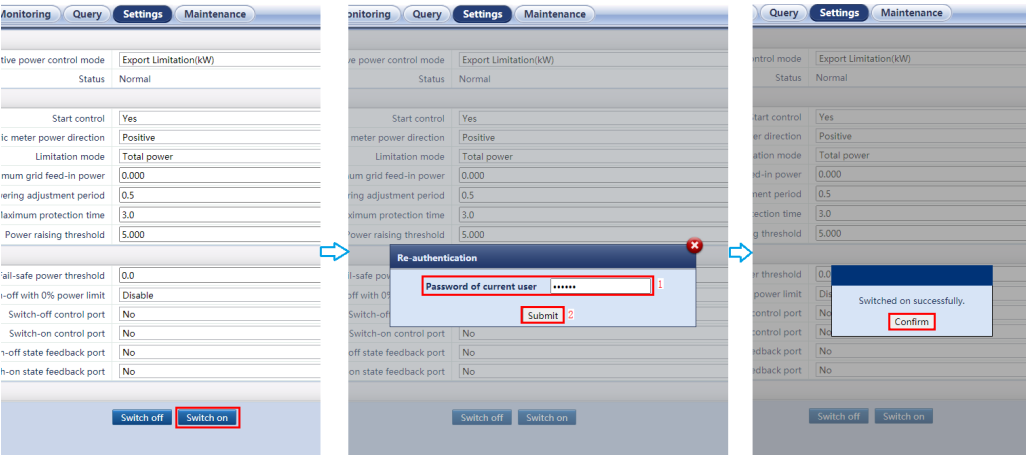
**Figure 4-2**



After switch-off is complete, check whether the circuit breaker is OFF.

- Switch-on control test:

**Figure 4-3**



After switch-on is complete, check whether the circuit breaker is ON.

# 5 Q&A

## 5.1 Why is there a failure to enable Export Limitation?

### 5.1 Why is there a failure to enable Export Limitation?

Answer: Check that **Active power control** is disabled. Perform as follows:

Log in as **Special User**. Choose **Settings > Power Adjustment > Active Power Control** and set **Active power control mode** to **No Limit**.

