Configuring Multiple Slave Inverters via a Master Inverter

Version History

- Initial release - March 2018

Introduction

This document explains how to:

- Configure multiple slave inverters via a master inverter
- Copy regional and power control parameters using the LCD panel or with an SD card

To configure multiple inverters from a master inverter, the inverter communication board firmware (CPU) version must be 3.22xx or later (but not version 4.xxxx). To check an inverter communication board firmware (CPU) version see the following section.

Checking a Communication Board Firmware (CPU) Version

→ To check a communication board firmware (CPU) version:

1. Short - press the LCD light button until the following screen is displayed:

```
I D : # # # # # # # #   # #
D S P 1 / 2 : x . x x x x / x . x x x x
C P U  : 0 0 0 3 . 1 6 0 0
C o u n t r y : X X X X X
```

2. Check the CPU version number. If required, upgrade the inverter software as described in upgrading_an_inverter_using_micro_sd_card.pdf

Configurable Parameters

You can configure the following parameters in multiple slaves via a master:

Regional Parameters

- Grid protection parameters:
  - Country setting
  - Customized grid protection parameters
- Language

Power Control Parameters

- Power control - active/reactive/ramp-up/wake-up

Modbus Device IDs

The master allocates each slave inverter a unique modbus device ID.

Supported Configurations

- RS485 bus configuration - up to 32 inverters connected on the same RS485 bus in a master/slave configuration. Only the master is physically connected to the internet through the Ethernet port.
- Cluster RS485 bus configuration - up to 16 RS485 buses with up to 32 inverters each. Requires RS485 Expansion Kit in

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inverters connected in two buses. Only the master of masters is physically connected to the internet through the Ethernet port.

NOTE

In a modbus network (a system connected to a 3rd party monitoring system with Sunspec protocol) up to 246 inverters can be configured from a single inverter and in a SolarEdge network (a system connected only to the SolarEdge monitoring platform) 512 inverters.
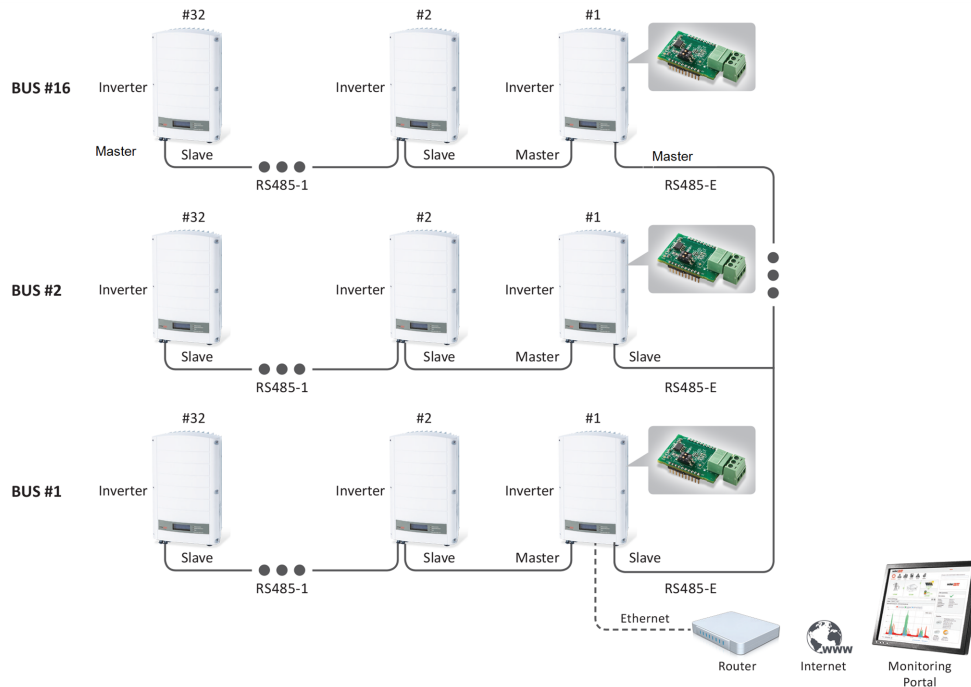

Figure 1: Multiple Inverters with RS485-E connection

Prerequisites

- The inverters are configured in the required configuration:
  - For single RS485 bus configuration - refer to https://www.solaredge.com/sites/default/files/solaredge-communication_options_application_note_v2_250_and_above.pdf.
    'Multiple Devices, RS485 Bus, Wired Ethernet (LAN) Connection' section
  - For cluster configuration - refer to the above application note ' Multiple Inverters with RS485-E connections' section
- The master is connected to the monitoring platform.
- The parameters you want to configure in the slaves are configured in all the masters.

Configuring Multiple Slave Parameters Via a Master

→ To configure multiple slave parameters via a master:

1. In the master inverter, enter Setup mode: Press the Enter button for at least 5 seconds. The following message is displayed:

```
P l e a s e   e n t e r
P a s s w o r d
* * * * * * * *
```

NOTE

When using the cluster RS485 bus configuration, configure the slave parameters via the cluster master (i.e. master of other masters).

2. Use the three rightmost internal LCD user buttons to type in the following password: 12312312. The inverter is now in Setup mode. Short-press the buttons to scroll between menus and long press the enter button to select a menu.

3. Select **Communication➔ RS485 -X Conf.** The following menu is displayed:

```
Device Type <SE>
Protocol <M>
Device ID <1>
Slave Detect <#>
Cluster SLV Detect
Long Slave Detect <#>
Slave List <#>
Multi-Inv. Set
```

4. Scroll to and select **Multi-Inv.Set**. The Set All menu is displayed:

```
Set All
Set Regional
Set PWR Control
Device IDs
```

5. From the **Set All** menu, select the required option:

> **NOTE**
> If configuring more than 256 slaves only the Set Regional and Set PWR Control options are available.

- **Set All** - configures regional parameters, power control parameters and modbus device IDs.
- **Set Regional** - configures country setting and language parameters
- **Set PWR Control** - configures power control parameters
- **Set Device IDs** - configures modbus device unique IDs

The Device IDs of the configured inverters are displayed.

A notification is displayed. If **Done** is displayed the process is complete.

```
Done
```

If **Failed** is displayed, at least one inverter was not configured. To see which inverter (s) weren't configured see 'To view a status log' procedure in the next section.

Repeat the action, if failed again (i.e at least one inverter was not configured) ensure RS485 connection and configurations of the failed inverter(s) are done correctly as explained in the inverter installation guide section 'Creating an RS485 Bus Connection'.

```
Failed
```

Viewing a Status Log

The status log contains error notifications such as failed. The inverter retains the status log until it is reset.

If for example parameters are not set in a slave the slave ID is displayed in the status log.

→ To view a status log:

- Scroll to and select **Multi-Inv. Set** then scroll to and select **Status Log**.

```
Get Settings
Export to SD
Status Log
Exit
```

A status log is displayed, for example:

```
50001AO1D:Failed
50001AO25:Failed
```

Copying Regional and Power Control Parameters

You can copy regional and power control parameters from one inverter to another, for example in case of a master inverter replacement, using the LCD panel or using an SD card. If the inverters are on the same bus use the LCD panel, and if they are on different buses use an SD card.

→   To copy regional and power control parameters using the LCD panel:

1.   On the inverter you are copying the parameters **from** scroll to **Multi-Inv. Set** and then select **Get Settings**.

```
G e t   S e t t i n g s
E x p o r t   t o   S D
S t a t u s   l o g
E x i t
```

A notification is displayed. If **Done** is displayed continue to the next step.

```
D o n e
```

If **Failed** is displayed, repeat the action.

```
F a i l e d
```

2.   On the inverter you are copying the parameters *to* scroll to **RS485-X** and select **Multi-Inv. Set**.
The Set All menu is displayed.

```
S e t   A l l
S e t   R e g i o n a l
S e t   P W R   C o n t r o l
D e v i c e   I D s
```

3.   Select **Set All**.

A notification is displayed. If **Done** is displayed the process is complete.

```
D o n e
```

If **Failed** is displayed, try copying the parameters from another inverter.

```
F a i l e d
```

→   To copy regional and power control parameters using an SD card:

1.   On the inverter you are copying the parameters from and on the inverter to which you are copying the parameters:

   a.   Turn OFF :

   ▬   inverter ON/OFF switch

   ▬   inverter Safety Switch (if applicable)

   ▬   AC breaker connected to the inverter

   b.   Wait 5 minutes for the capacitors to discharge.

   c.   Open the inverter cover's six Allen screws and carefully pull the cover horizontally before lowering it, as described in the inverter Installation Guide.

   ⚠ WARNING!
   ELECTRICAL SHOCK HAZARD. Do not touch uninsulated wires when the inverter cover is removed.

   d.   Insert the card into the card slot on the communication board in the inverter from which you are copying the parameters.
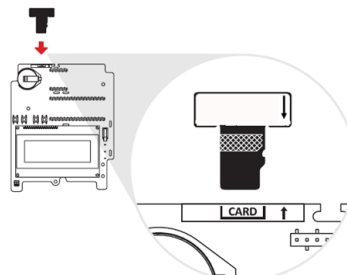
   e.   Turn the AC on.

   f.   Enter Setup mode: Press the Enter button for at least 5 seconds. The following message is displayed:

```
P l e a s e   e n t e r
P a s s w o r d
* * * * * * * *
```

g. Use the three rightmost internal LCD user buttons to type in the following password: 12312312. The inverter is now In Setup mode. Short-press the buttons to scroll between menus and long press the enter button to select a menu.

h. Scroll to and select **Multi-Inv. St**. then scroll to and select **Export to SD.**

```
G e t   S e t t i n g s
E x p o r t   t o   S D
S t a t u s   l o g
E x i t
```

A notification is displayed. If **Done** is displayed the process is complete.

```
D o n e
```

If **Failed** is displayed, try copying the parameters from another inverter

```
F a i l e d
```

2. Remove the SD card from the inverter and insert it in the required inverter.
3. Turn all the following on (i.e restart) :
   - ▬ inverter ON/OFF switch
   - ▬ inverter Safety Switch (if applicable)
   - ▬ AC breaker connected to the inverter.

A notification is displayed.

If **Done** is displayed the parameters have been copied to the inverter.

```
D o n e
```

If **Failed** is displayed, try copying the parameters using a different SD card.

```
F a i l e d
```