

TS4 commissioning with external Cloud Connect CCA



Commissioning of PV Systems with TS4



The TS4 commissioning process may differ depending on the type of system.
Only use one of the methods:

External Cloud Connect Advanced (CCA)

- TS4 commissioning via Tigo Portal and Tigo Smart App
- Up to 7 gateways per CCA



Integrated Cloud Connect functionality

- TS4 commissioning via integrated inverter WebUI
- Up to 3 gateways per inverter



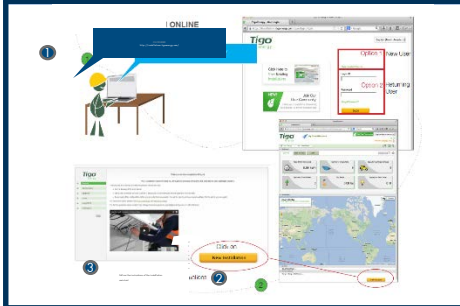
- Only use the inverter WebUI and Sunny Portal

TS4 commissioning with external Cloud Connect CCA

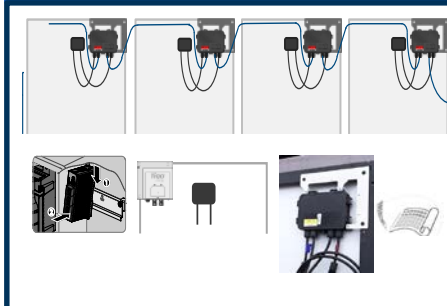


1. Preparation in Tigo Portal or via Tigo Smart App:

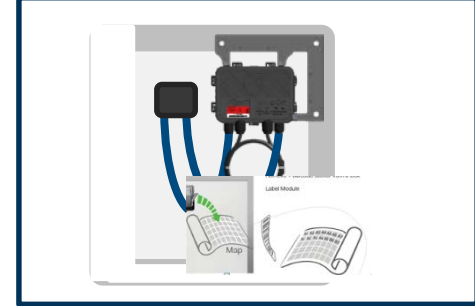
- Location
- Equipment



2. Installing Cloud Connect Advanced (CCA), Gateways & TS4-R

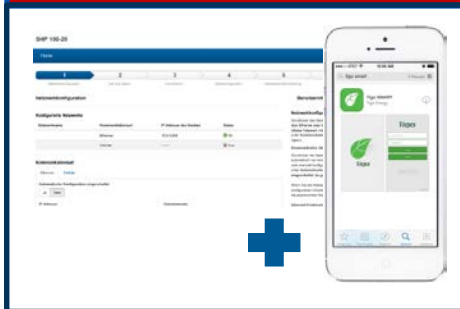


3. Creation of layout plan of TS4

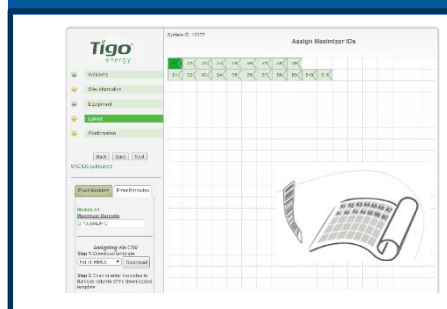


4. Commissioning

- Inverter
- TS4/Discovery



5. System layout in Tigo Portal or via Tigo Smart App



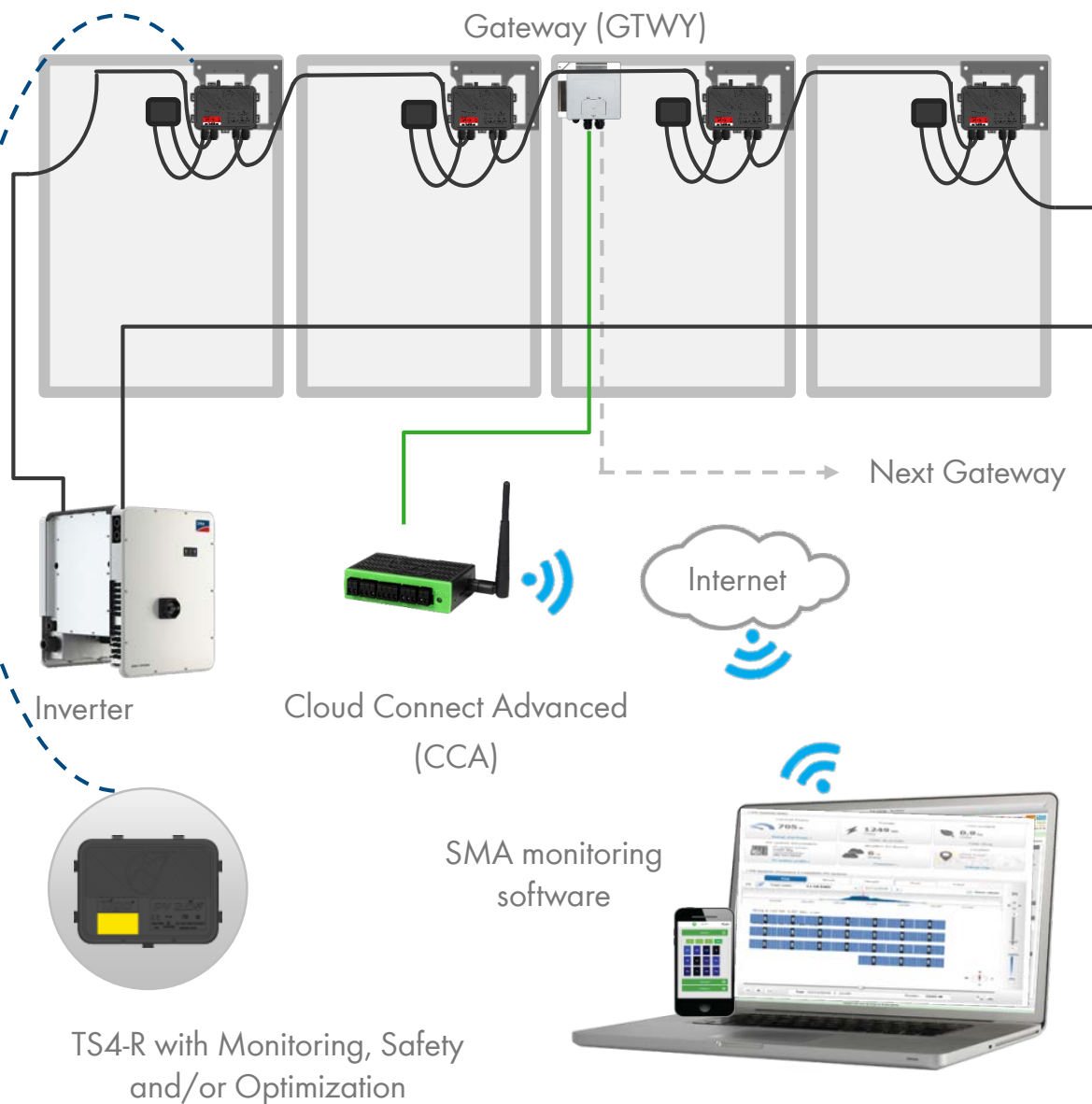
6. Registration Sunny Portal



In the office

Onsite

SYSTEM OVERVIEW: with external CCA



DESIGN RULES:

1 CLOUD CONNECT ADVANCED (CCA):

- Up to 7 GTWYs and 360 PV modules
- All smart modules in the same string must be assigned to the same CCA.

1 GATEWAY (GTWY):

- Up to 120 PV modules
- Modules must be within a radius of up to 10 m (33 ft.) of the GTWY, depending on roof topology and material

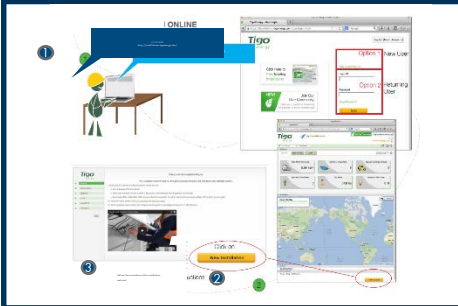
For further information [CLICK HERE](#)

TS4 commissioning with external Cloud Connect CCA

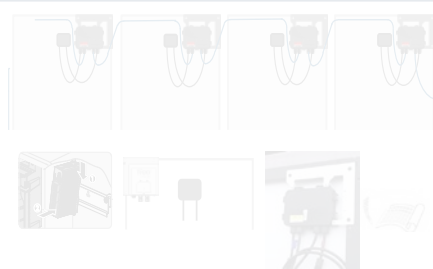


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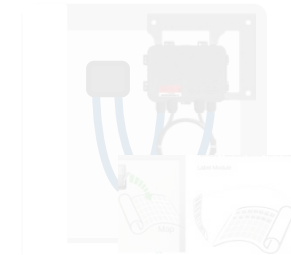
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2. Installing Cloud Connect Advanced (CCA), Gateways & TS4-R

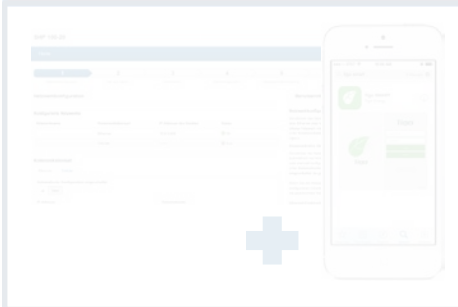


3. Creation of layout plan of TS4

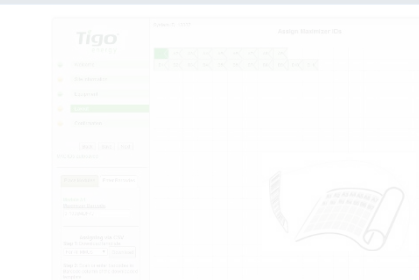


4. Commissioning

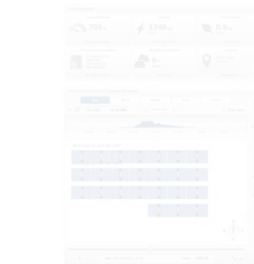
- Inverter
- TS4/Discovery



5. System layout in Tigo Portal or via Tigo Smart App



6. Registration Sunny Portal



In the office

Onsite

CONFIGURE SYSTEM ONLINE *1



- Go to www.Tigoenergy.com.
- Create Installer account (if necessary).
- To begin online configuration process, enter installation details, such as location and equipment type.*2
- For large sites, create a system map and use it for organized barcode collection process
- Sites with 50 panels or less do not require a map in case physical position isn't mandatory

1. Go to <http://installations.tigoenergy.com/>

CLICK HERE
<http://installations.tigoenergy.com/>

Option 1 New User
Option 2 Returning User

Click on
New Installation

2. Follow the instructions of the installation assistant.

3. Follow the instructions of the installation assistant.

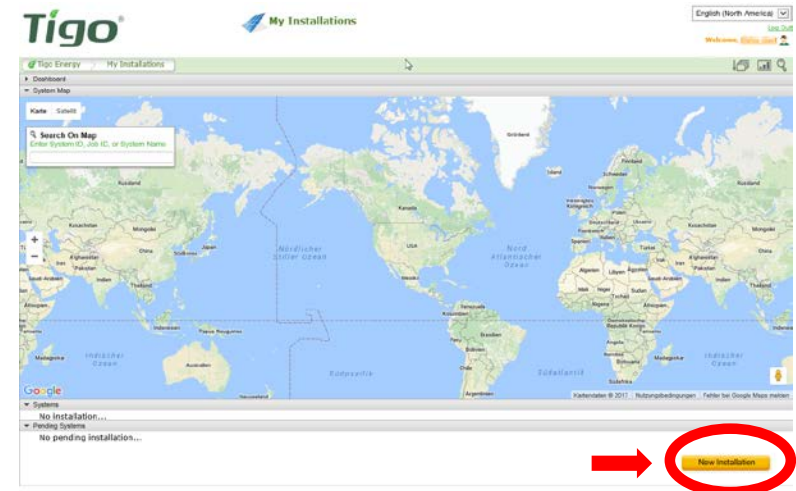
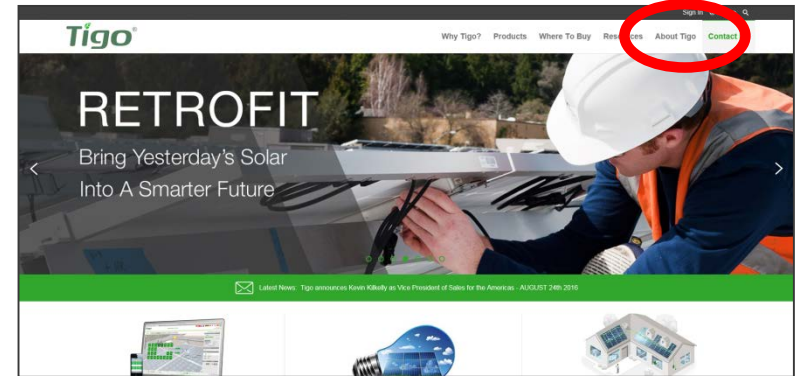
*1 Only for systems with external CCA. In case of inverters with integrated Cloud Connect functionality, the system is configured using the commissioning assistant of the inverter.

*2 For smart module systems with less than 50 panels, this step can be done after the physical installation via the Tigo APP.

CONFIGURE SYSTEM ONLINE *1



- To configure a system online, log onto tigoenergy.com with your installer account.
- You can also create an installer account here if this is your first installation
- Click "New Installation" to begin *2
- Have your site map or string list with barcodes ready



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CONFIGURE SYSTEM ONLINE *1



Follow the steps on the installation assistant*2:

- After completing the first step, the installation becomes a Pending System and you can continue from the last step completed.
- Pending systems are listed on your "My Installations" page below the map.
- Enter site information:
 - Address
 - Site owner information
 - 3rd party finance if applicable
- Click "Next" to proceed.



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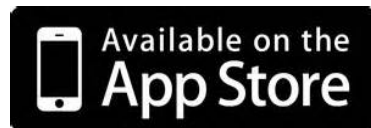
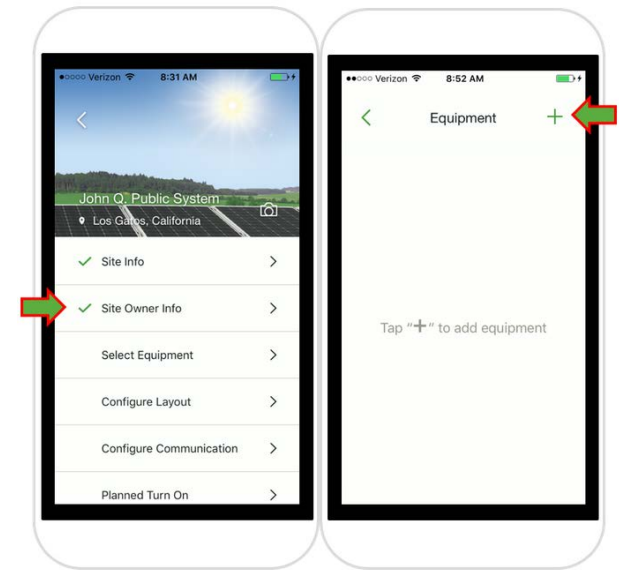
COMMISSIONING ^{*1} WITH TIGO SMART APP



As an alternative, the setup and commissioning of a new PV system can be carried out via the Tigo SMART app.

Look for the Tigo SMART APP

- Go to the App Store or Google Play and search for "Tigo SMART"
- Download the app and open it once the installation process is complete



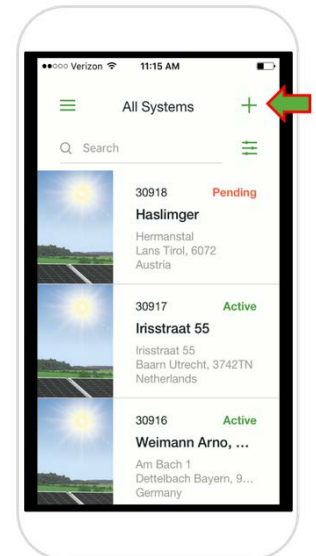
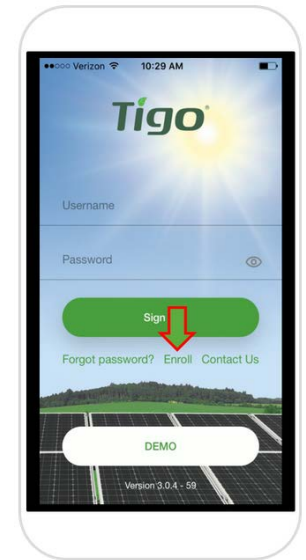
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COMMISSIONING *¹ WITH TIGO SMART APP

Requires active mobile data connection



- Login by entering your user name and password.
- If you have not signed up yet, press "Enroll" to create a new account.
- To create a new system, press "+" in the right top corner of your screen.
- To edit and monitor an already configured system, click on the respective system.



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COMMISSIONING *¹ WITH TIGO SMART APP



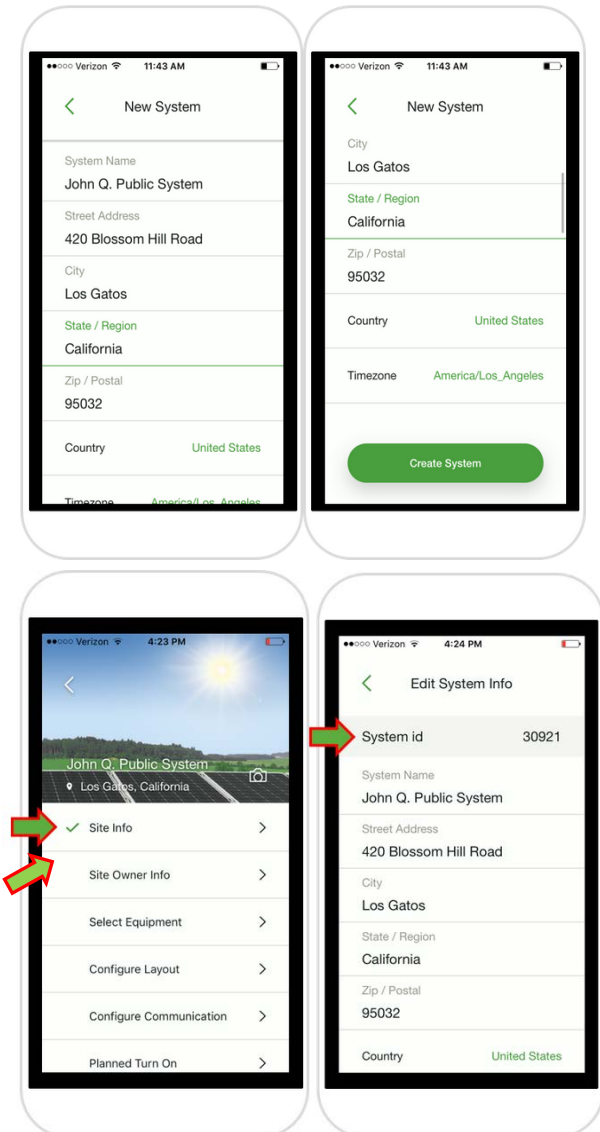
Requires active mobile data connection

- Enter system details and select "Create System".
- Ensure that "Site Info" is checked.
- When you open the "Site Info" once more, you will see that now the system has a "system id".

Note: The "system id" clearly identifies the system and must be mentioned in case of support requests.

Note: Now the new system is in Pending state.

- Go to "Site Owner Info".



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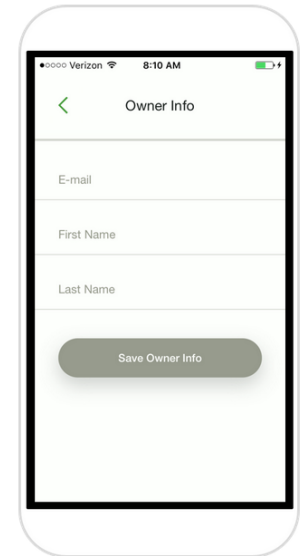
6. COMMISSIONING *¹ WITH TIGO SMART APP

Requires active mobile data connection



Site Owner Info

- Enter the e-mail address and name of the system owner here.
- The "Site Owner Info" is not required to set up a new system. This information can be subsequently entered and edited at all times.



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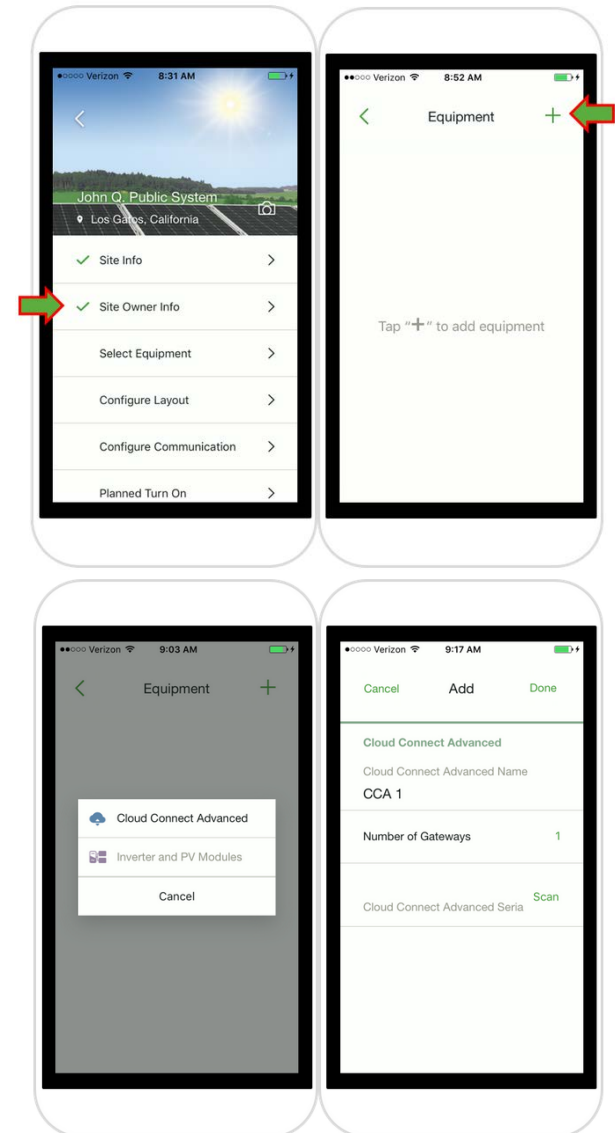
COMMISSIONING *¹ WITH TIGO SMART APP

Requires active mobile data connection



Select Equipment

- After saving the "Site Owner Info", ensure that it is checked.
- Go to "Select Equipment".
- Press "+" in the right top corner of your screen.
- Select "Cloud Connect Advanced" (CCA).
- Give each CCA an unique name or leave the default value.
- Enter number of Gateways connected to the CCA.



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6. COMMISSIONING *¹ WITH TIGO SMART APP



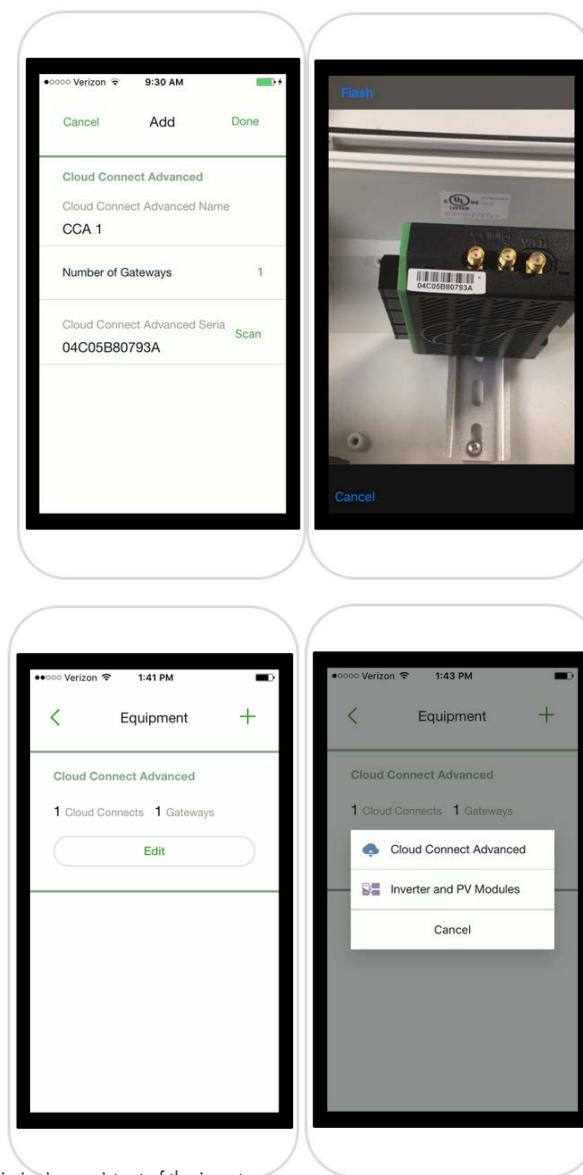
Requires active mobile data connection

Select Equipment

- Enter the CCA serial number manually or scan the barcode.
- Allow the Tigo app to access your camera.
- Press "Done" and repeat the process for each CCA included in the system.

Note: Here you can change the CCA serial number at all times.

- After completing "Cloud Connect Advanced", go to "Inverter and PV Modules".



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6. COMMISSIONING *¹ WITH TIGO SMART APP

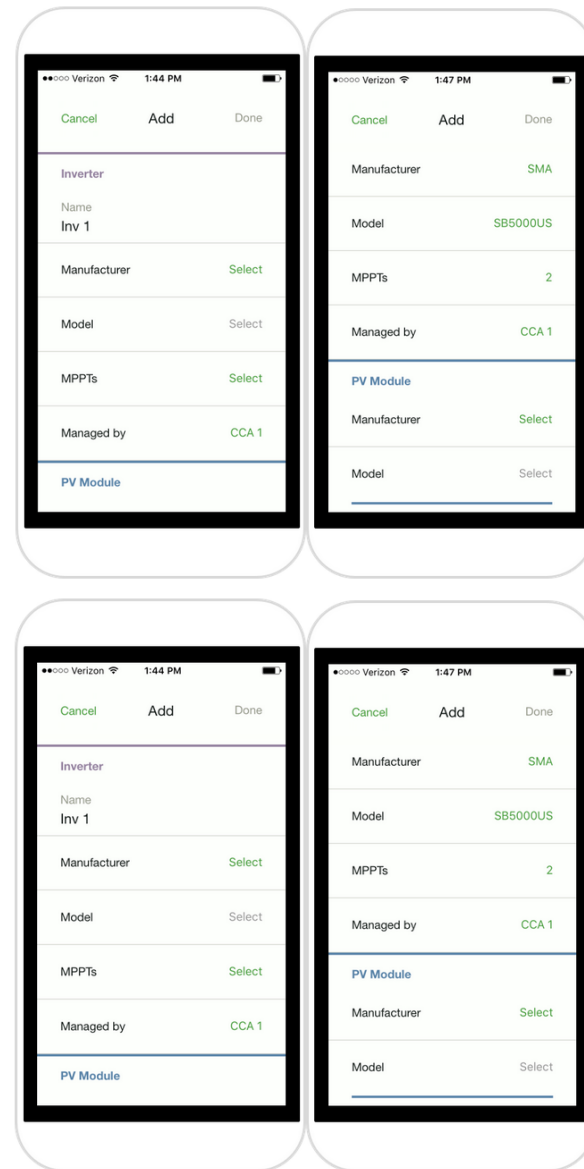


Requires active mobile data connection

Select Equipment

- Enter a name for the inverter or use the default name.
- Select inverter model, number of MPPTs and of connected CCAs.
- Select the manufacturer and PV module type.

Note: To add an inverter or a module not included in the list, click "+" at the top right.



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6. COMMISSIONING *¹ WITH TIGO SMART APP



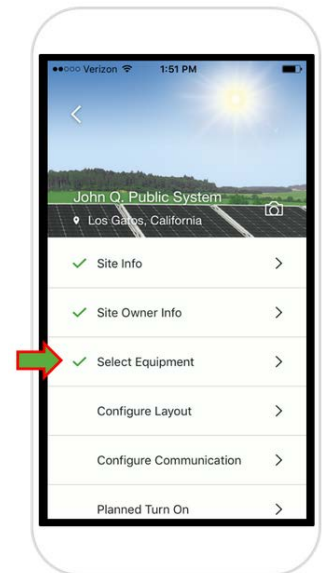
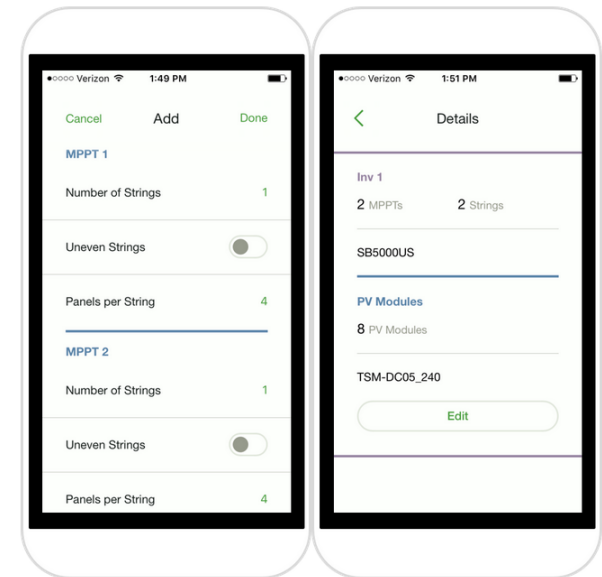
Requires active mobile data connection

Select Equipment

- Assign to each MPPT the number of strings and modules to be used.
- Activate the switch for uneven strings if the strings have an uneven number of modules.
- Click on "Done".

Note: Here you can change the inverter- and module data at all times.

- Ensure that "Select Equipment" is checked.
- Go to "Configure Layout".



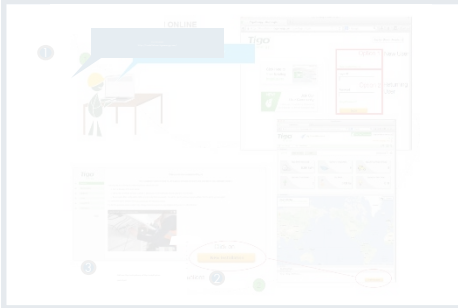
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TS4 commissioning with external Cloud Connect CCA

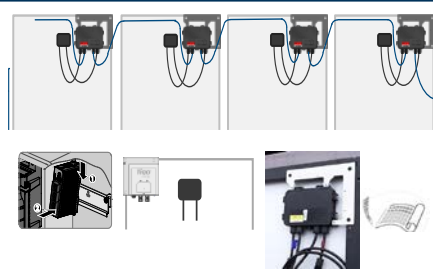


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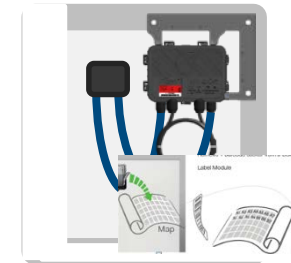
- Location
- Equipment



2. Installing Cloud Connect Advanced (CCA), Gateways & TS4-R

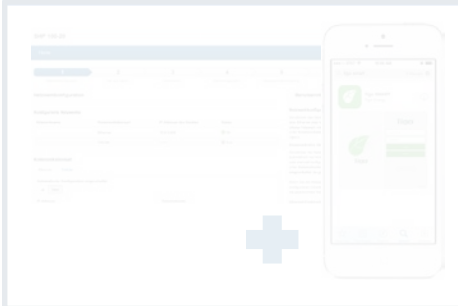


3. Creation of layout plan of TS4

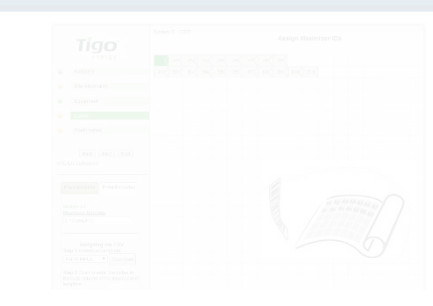


4. Commissioning

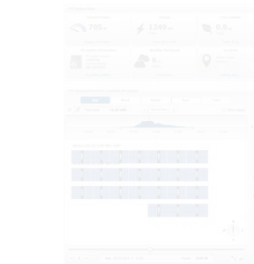
- Inverter
- TS4/Discovery



5. System layout in Tigo Portal or via Tigo Smart App



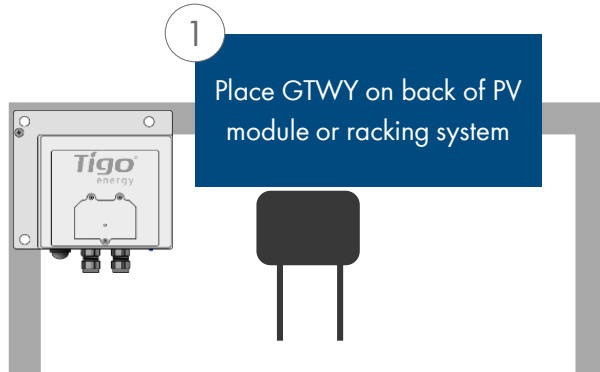
6. Registration Sunny Portal



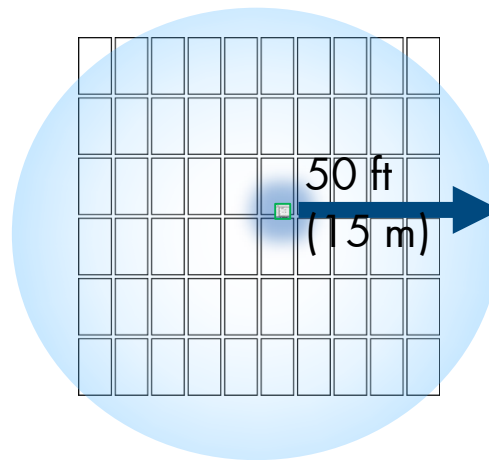
In the office

Onsite

Installing Gateways (GTWY)



Gateway attaches to module frame using provided bracket

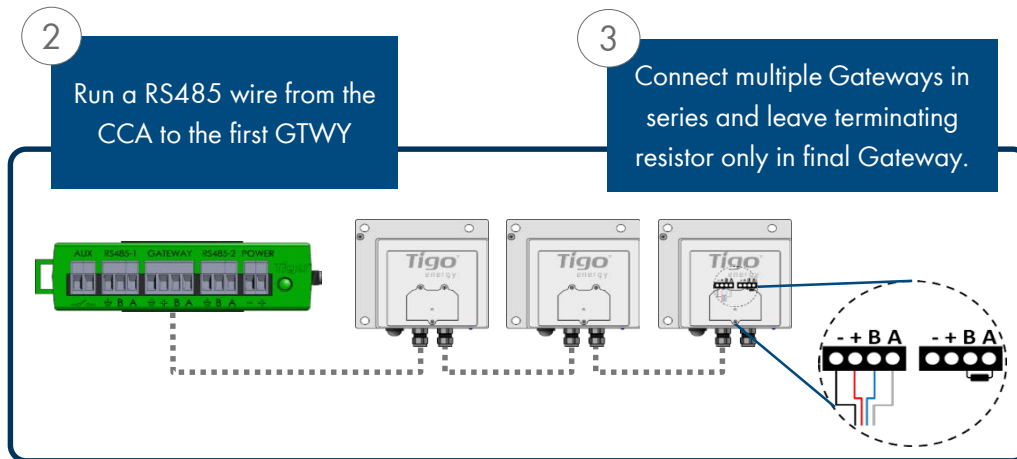


Locate Gateway near center of array or each sub-array

Installation:

1. Connect all GTWY cables before powering on Cloud Connect
2. Install GTWY on back of PV module using provided bracket or bolt to the racking system
3. Power on Cloud Connect Advanced and perform Gateway test from Tigo SMART App

RS485 communication cable is recommended.
2 twisted pair, sunlight resistant or direct burial



Additional information:

- [Gateway Hardware Guide](#)
- [Gateway Placement Guide](#)
- [Communication Cable Guide](#)

Installing Gateways (GTWY)



Color code of status LED of Gateway

In the initial state, before "Discovery"

- LED is glowing blue



During commissioning / "Discovery"

- LED flashes white



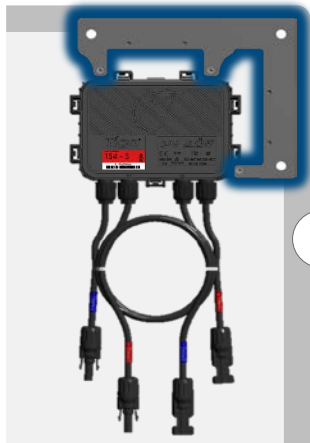
After commissioning / "Discovery"

- Blue LED flashing every 2 seconds
- LED flashing rapidly yellow



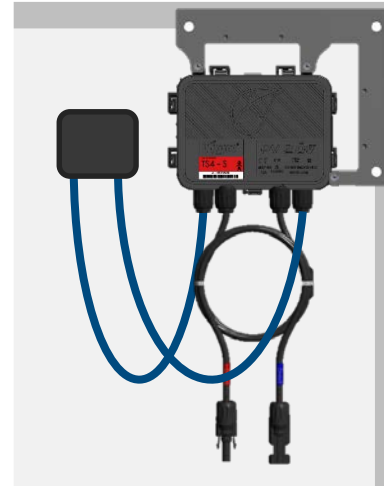
Status LED

Installation of TS4 and creation of layout plan (TS4-R)



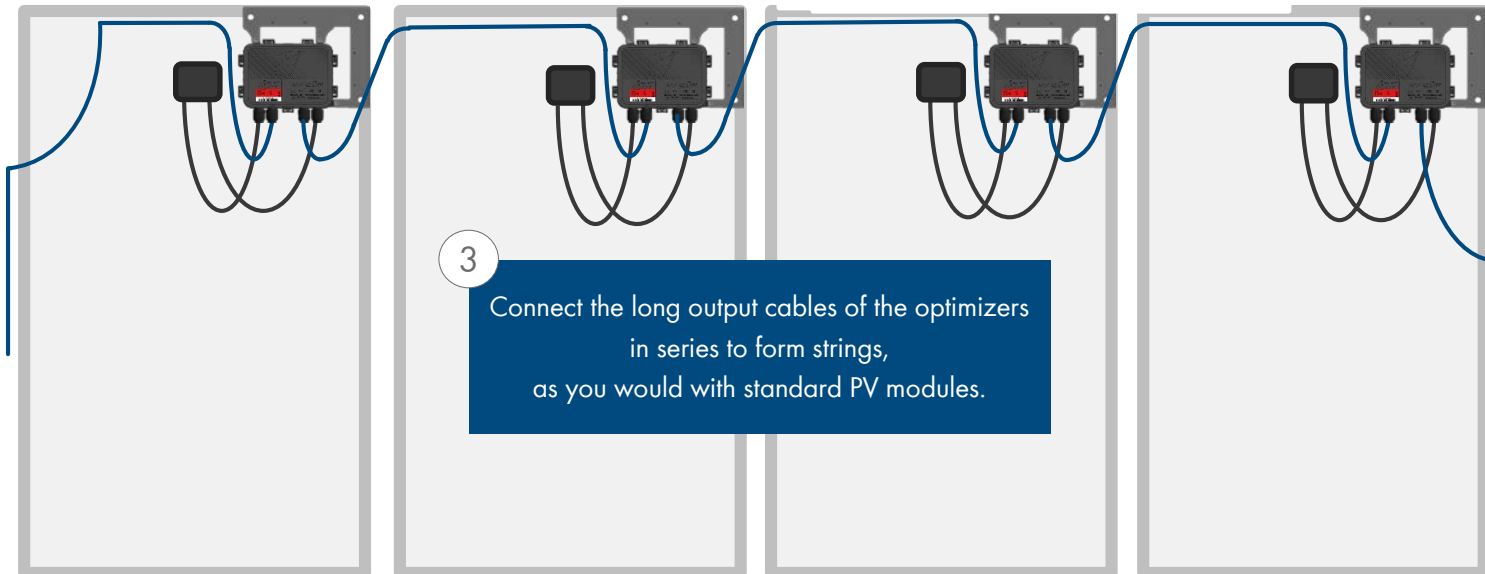
1

Mount the optimizer on the top right corner of the PV module.



2

Connect the PV cables from the module to the short leads of the TS4-R.



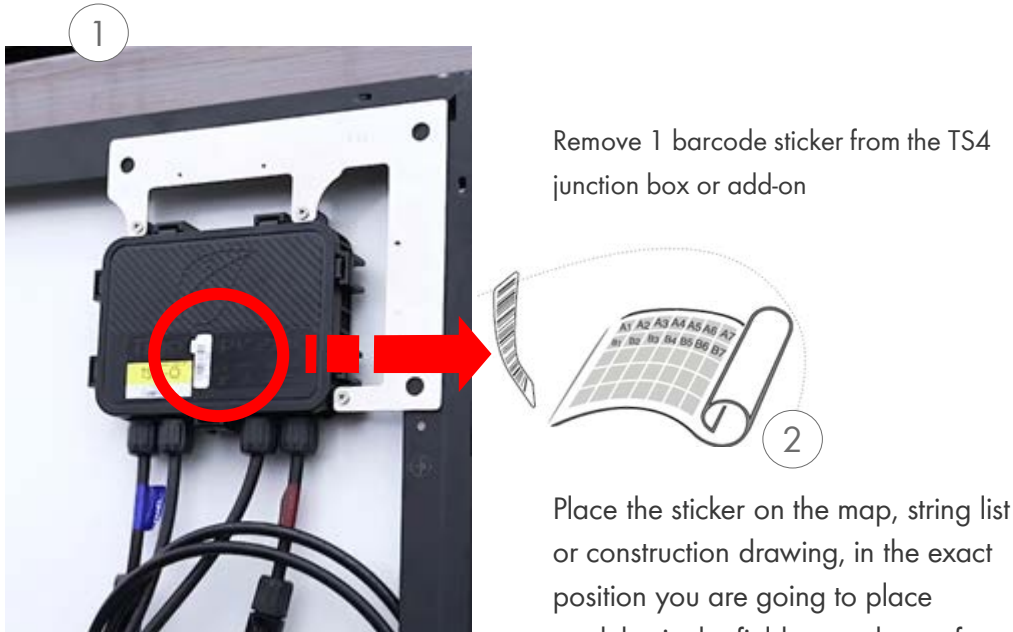
3

Connect the long output cables of the optimizers in series to form strings, as you would with standard PV modules.

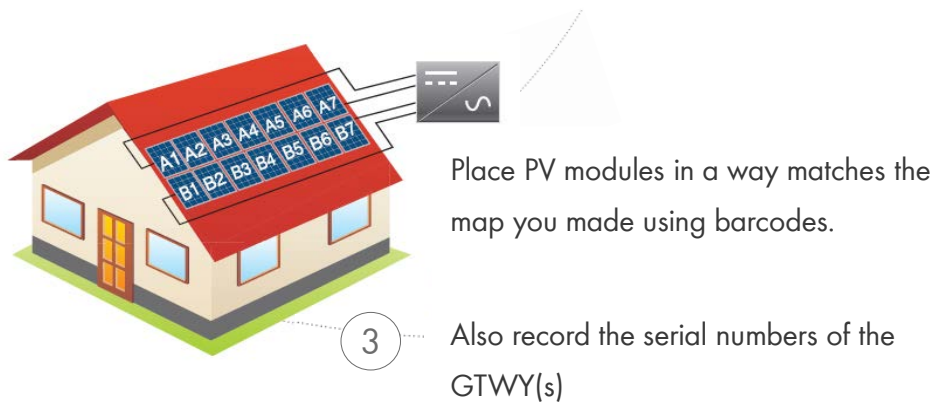


Observe the sequence of the action steps to avoid damaging the product.

Installation of TS4 and creation of layout plan (TS4-R)



Place the sticker on the map, string list or construction drawing, in the exact position you are going to place modules in the field or on the roof.



TEMPLATES:

Create your layout plan using Tigo's string list template. To view and download, [CLICK HERE](#).

Another option is to first map your site online (see next page). At the end, you'll be able to download a physical map of your system to help map the barcodes

Note:

If you're installing 50 modules or less and don't need an exact physical position you may skip the mapping step and go straight to commissioning

MAKE SURE you take the junction box's label or the TS4-R label, **NOT** the module's

INSTALLING THE CLOUD CONNECT ADVANCED (CCA)



Color code of LED of CCA

Auto PV safe

- A red/yellow flashing LED indicates that the system has changed automatically to the PV-off mode.



User PV Safe

- A green/yellow flashing LED indicates that the system has been switched to PV-off mode manually.



Smart App Activity

- A green flashing LED indicates that the mobile app is connected to the CCA and actively used.



Discovery

- A yellow flashing LED indicates that the CCA scans for Gateways and Smart Modules (part of the commissioning process).



Error

- A red flashing LED indicates that the Discovery process has failed or the CCA is not able to connect to the Tigo server. In the event of errors, connect the CCA to the mobile app for further details.



Warning

- A yellow flashing LED indicates that (a) the Discovery process has not run its course, (b) Discovery process ended but not all Gateways or modules have been found or (c) the CCA is not able to upload data. Connect the CCA to the mobile app for further details.



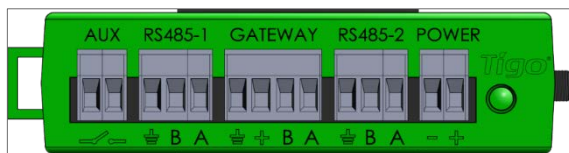
System ok

- A green flashing LED indicates that (a) the Discovery process is completed and (b) all Gateways and Smart Modules have been found and (c) the CCA is connected to the Tigo server.



System ok

- If the LED is not glowing, the CCA may not be supplied with voltage (powered off).



Measurements during commissioning



All measurements can be carried out as usual during commissioning. Deviating from usual measurements, currents may only be measured via the operating-current monitoring system when using TS4 optimizers. This must be carried out during feed-in operation. Test-voltage specifications remain unaffected when using TS4 optimizers.

The following test measurements must be carried out when commissioning a PV system with TS4 optimizers:

Recommended procedure:

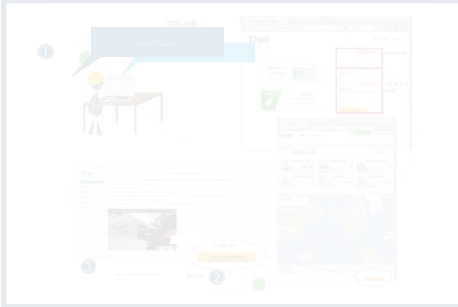
1. Carry out the following test measurements before commissioning TS4 communications:
 - Check polarity.
 - Check open-circuit voltage of string.
 - Check insulation resistance of DC circuit.
2. Commission entire system.
3. Carry out the following test measurements after commissioning TS4 communications:
 - Check string-circuit currents (during feed-in operation).
 - Measure insulation resistance of module string.
 - Carry out function test.

TS4 commissioning with external Cloud Connect CCA

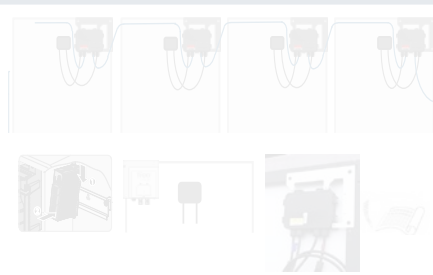


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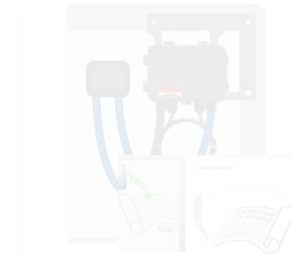
- Location
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2. Installing Cloud Connect Advanced (CCA), Gateways & TS4-R

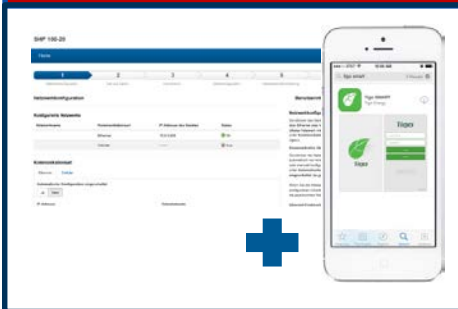


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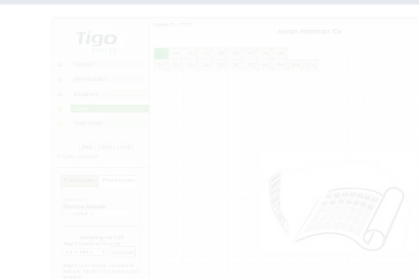


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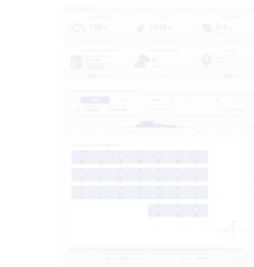
- Inverter
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5. System layout in Tigo Portal or via Tigo Smart App



6. Registration Sunny Portal



In the office

Onsite

COMMISSIONING *¹ WITH TIGO SMART APP



To Commission the system use your smartphone, download the Tigo SMART app and follow its instructions.

To commission the Tigo devices, three simple steps must be completed:

1. NETWORK TEST
2. GATEWAY TEST
3. DISCOVERY

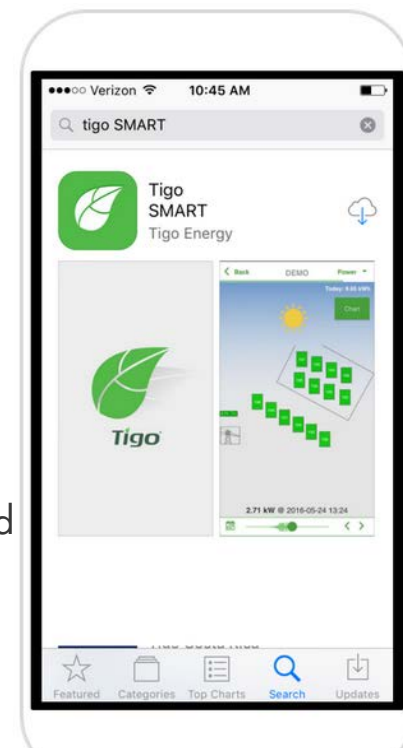
For systems with multiple Cloud Connect Advanced units, these tests need to be performed on each individual Cloud Connect Advance .

Network and Gateway tests can run at the same time on different CCAs. However, Discovery must be initiated on Cloud Connect Advanced one by one, making sure GTWY discovery stage is complete before moving to the next one.

This may take several minutes to several hours depending on the size of the system.

Note:

The discovery process can be initiated for sites with more than 50 Smart Modules only after the online configuration of the system has been completed and downloaded by the Cloud Connect.



*¹ Only for systems with external CCA. In case of inverters with integrated Cloud Connect functionality, the system is configured using the commissioning assistant of the inverter.

COMMISSIONING

⇒ Smart Phone Connectivity



During the setup process, you'll see in the guide one of two messages. Use your phone's settings to toggle between WLAN networks:

Requires active mobile data connection

This message implies that the phone should be connected to the Internet and have mobile data enabled

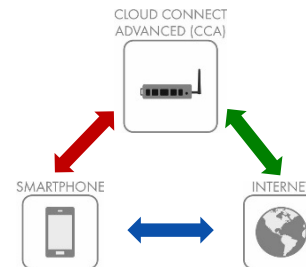
Or:

Requires direct WLAN connection to Cloud Connect

This message implies that the phone should be connected to the Cloud Connect using WLAN. The Cloud Connect's WLAN network can be identified by its format: SM-XXXXXXXXXXXX

Requires a connection between Cloud Connect Advanced and Internet

Example of a standard WLAN network data connection



Example of an available Cloud Connect Advanced WLAN connection

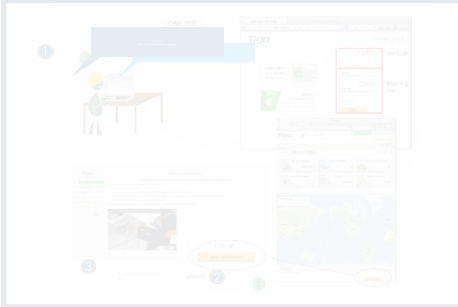


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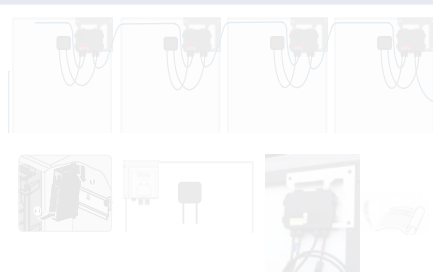


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- Location
- Equipment



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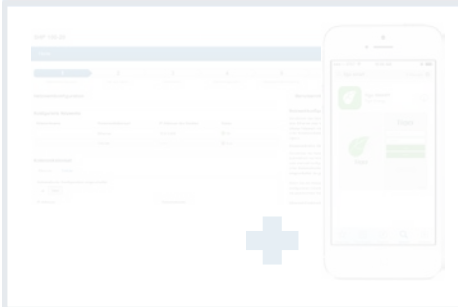


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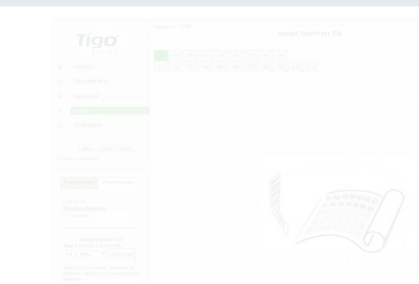


4. Commissioning

- Inverter
- TS4/Discovery



5. System layout in Tigo Portal or via Tigo Smart App



6. Registration Sunny Portal



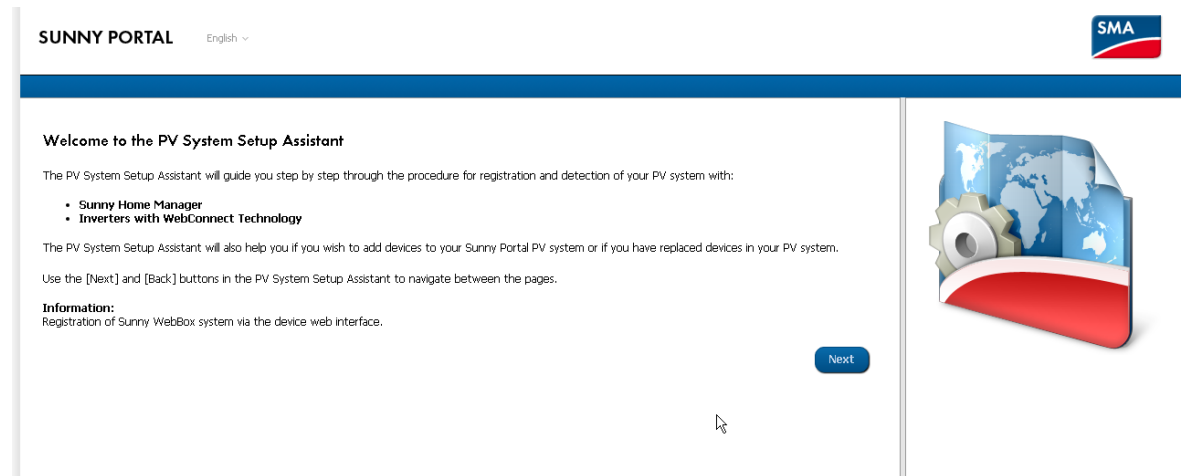
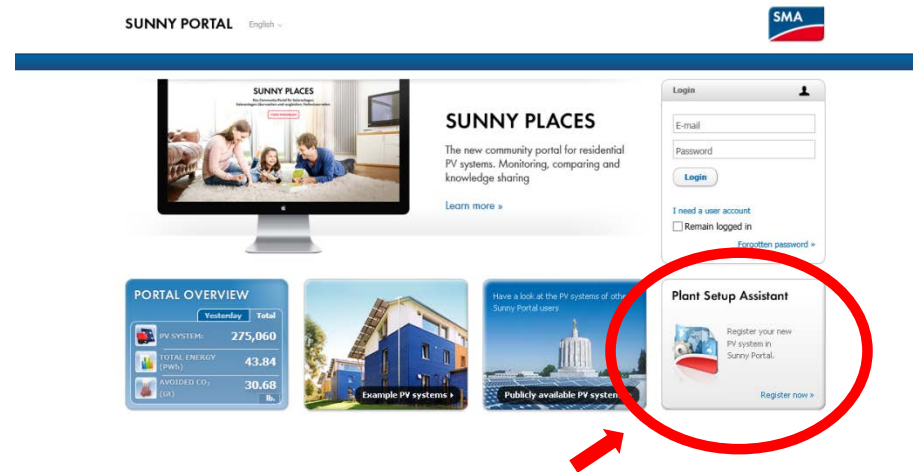
In the office

Onsite

Registration of PV system in Sunny Portal



- > Go to www.SunnyPortal.com.
- > Start the system setup assistant.
- > Follow the instructions of the system setup assistant.



Registration of PV system in Sunny Portal



Plant Setup Assistant

- Login / User Registration
- Enter PV System name and Speedwire Installer password

SUNNY PORTAL English ▾

1 2 3 4 5 6 7 8

User Registration

If you are not already registered in Sunny Portal, select "I am not yet registered".

☐ I am not yet registered.

☒ I am already registered in Sunny Portal.

[Forgotten Password?](#)

[Back](#) [Next](#)

SUNNY PORTAL English ▾

1 2 3 4 5 6 7 8

Select PV system

You can create a new PV system or select an existing PV system in order to replace or add devices.

☒ Create a new PV system

PV System Properties

PV System Name: *	Eagle-Sim with Tigo
PV System Password: *	*****
Repeat Password: *	*****

* Mandatory field

☐ Add or replace devices

[Back](#) [Next](#)

Registration of PV system in Sunny Portal



Plant Setup Assistant

- Enter inverters PIC & RID
- Repeat the process using systems with multiple inverters.

SUNNY PORTALEnglish ▾

12345678

Select devices

Please enter the PIC and the RID in order to register the device. Select [Identify].
For Sunny Home Manager: enter the serial number in the "PIC" field and the registration ID in the "RID" field.

PIC *
003140876543090

RID *
WL36EJ

Identify

* Mandatory field

Back

Next

SUNNY PORTALEnglish ▾

12345678

Select devices

Please enter the PIC and the RID in order to register the device. Select [Identify].
For Sunny Home Manager: enter the serial number in the "PIC" field and the registration ID in the "RID" field.

PIC *
003140876543090

RID *
WL36EJ

 SB7.7-1SP-US-40



Identify

* Mandatory field

Back

Next

Registration of PV system in Sunny Portal



Plant Setup Assistant

- In background Sunny Portal searches a Tigo system with an inverter with same serial ID
- For systems with multiple inverters, searches one by one until a system is found
- Search result is shown on PV System Properties page

PV System Properties	
PV system power: *	7.9 kWp
Specific Annual Yield: *	kWh / kWp
Street/No:	Sonnenallee 1
Zip Code/City: *	34266 Niestetal
Country: *	United Kingdom
Time Zone: *	(UTC+01:00) Amsterdam, Berlin, Bern, Niestetal, Rome, Sta
Automatic updates: *	☒ Automatic update of all devices in the PV system
Sunny Places:	☐ Approve system for Sunny Places Please enter the operator's e-mail address so that he can use Sunny Places. The operator will then automatically be assigned the "standard user" role in the Sunny Portal and will receive an e-mail with more information on Sunny Places. E-mail address of the operator:
Tigo Components:	Tigo components exist in the PV system. Cloud Connect serial number: 5066 Number of components: 86

* Mandatory field

Back

Next

SUNNY PORTAL

English ▾

Your Sunny Portal PV system 'Eagle-Sim with Tigo' has been installed successfully!



Communication monitoring is activated



Automatic daily report is activated.



Tigo components exist in the PV system.

To the PV system

Registration of PV system in Sunny Portal



Plant Setup Assistant

- If no Tigo system found, user can search with Tigo User Account
- User enters Tigo Username and password
- Users select the Tigo system via the dialog box → Only Tigo systems with SMA inverters are listed.

1 2 3 4 5 6 7 8

Extended PV System Properties

PV System Properties

PV system power: *

7.9

kWp

Specific Annual Yield: *

kWh / kWp

Street/No:

Zip Code/City: *

Country: *

United Kingdom

Time Zone: *

(UTC+01:00) Amsterdam, Berlin, Bern, Nistetal, Rome, St...

Automatic updates: *

☐ Automatic update of all devices in the PV system

Sunny Places:

☒ Approve system for Sunny Places

Please enter the operator's e-mail address so that he can use Sunny Places. The operator will then automatically be assigned the "standard user" role in the Sunny Portal and will receive an e-mail with more information on Sunny Places.

E-mail address of the operator: *

Tigo components:

No Tigo components found automatically at the Tigo Cloud.
If you do have Tigo components, please click [here](#) to search manually.

* Mandatory field

Back

Next

1 2 3 4 5 6 7 8

Extended PV System Properties

PV System Properties

PV system power: *

7.9

kWp

Specific Annual Yield: *

kWh / kWp

Street/No:

Zip Code/City: *

Country: *

United Kingdom

Time Zone: *

(UTC+01:00) Am...

Automatic updates: *

☐ Automatic up...

Sunny Places:

☒ Approve syste...

Please enter the operator's e-mail address so that he can use Sunny Places. The operator will then automatically be assigned the "standard user" role in the Sunny Portal and will receive an e-mail with more information on Sunny Places.

E-mail address of the operator: *

Tigo components:

No Tigo components found automatically at the Tigo Cloud.
If you do have Tigo components, please click [here](#) to search manually.

* Mandatory field

Back

Next

Login to Tigo Cloud

Please enter your login credentials for the Tigo Cloud for searching Tigo components and click "Login".

Login

1 2 3

Extended PV System Properties

PV System Properties

PV system power: *

7.9

kWp

Specific Annual Yield: *

kWh / kWp

Street/No:

Zip Code/City: *

Country: *

United Kingdom

Time Zone: *

(UTC+01:00) Am...

Automatic updates: *

☐ Automatic up...

Sunny Places:

☒ Approve syste...

Please enter the operator's e-mail address so that he can use Sunny Places. The operator will then automatically be assigned the "standard user" role in the Sunny Portal and will receive an e-mail with more information on Sunny Places.

E-mail address of the operator: *

Tigo components:

No Tigo components found automatically at the Tigo Cloud.
If you do have Tigo components, please click [here](#) to search manually.

* Mandatory field

Back

Next

Your systems at Tigo Cloud

Multiple systems found, please choose:

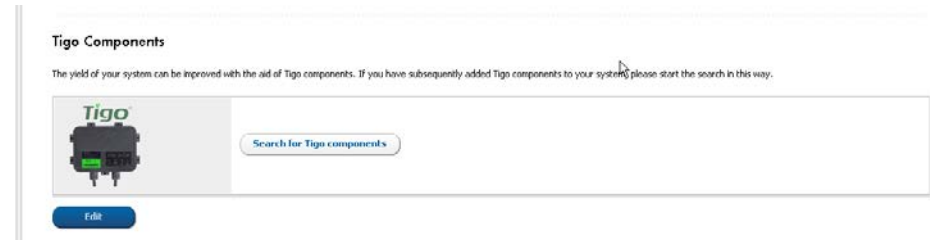
System ID	PV System
000001	TEST
000002	TEST
000003	TEST
000004	TEST
000005	TEST
000006	TEST
000007	TEST
000008	TEST
000009	TEST
000010	TEST
000011	TEST
000012	TEST
000013	TEST
000014	TEST
000015	TEST
000016	TEST
000017	TEST
000018	TEST
000019	TEST
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000096	TEST
000097	TEST
000098	TEST
000099	TEST
000100	TEST

Registration of PV system in Sunny Portal



System properties

- Tigo commissioning in already existing PV systems is available on page „PV System properties“, tab „parameters“
- Searches first for Tigo systems with same inverter serial numbers (as with the system setup assistant).
- If no system has been found, the search with Tigo user credentials is possible (as with the system setup assistant).



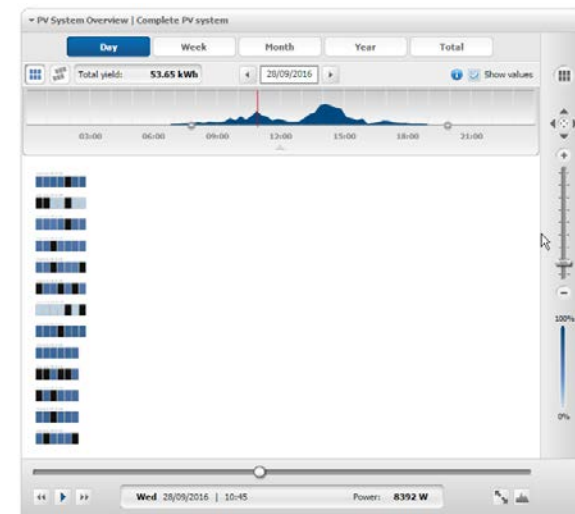
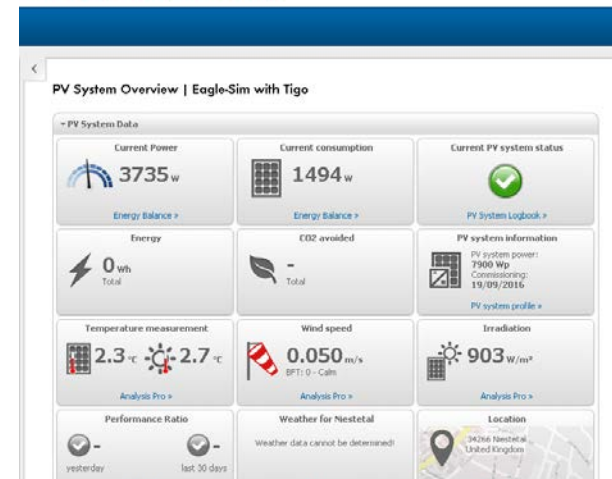
Registration of PV system in Sunny Portal



Panel Level Monitoring

- On page „PV System Overview“, the PLM (Panel Level Monitoring) view is shown below the widgets
- Layout is currently copied from Tigo Cloud.
- Copying data from Tigo cloud is frequently copied. May take up to 30 minutes until data is initially shown

Verification System, 63WPO01 (Version: 7.11.7.42644)



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