

SMA POWER+ SOLUTION – TS4



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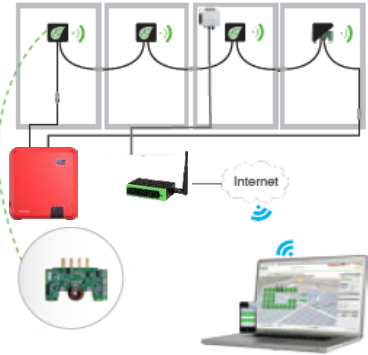
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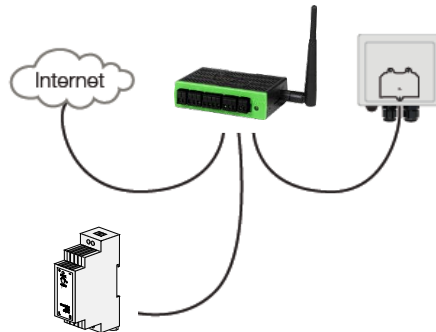
QUICK INSTALLATION GUIDE



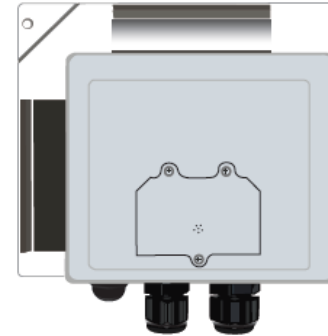
1. System Overview In Office Preparation



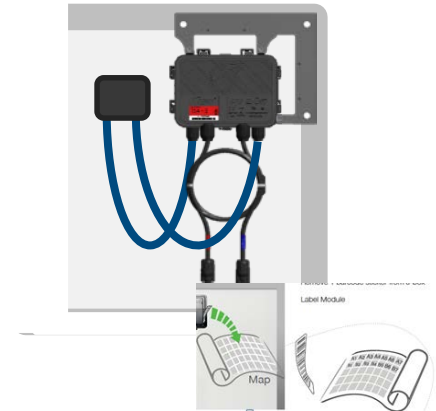
2. Installing Cloud Connect Advanced (CCA)



3. Installing Gateways (GTWY)



4. Installing and Mapping TS4-R



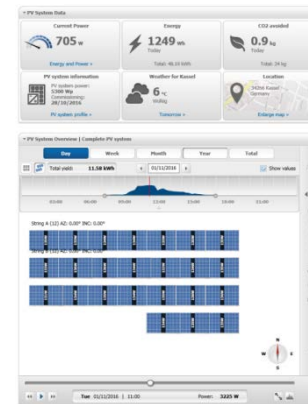
5. Configuring the System Online



6. Commissioning



7. Registration Sunny Portal



1. SYSTEM OVERVIEW: TS4-R



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 CC
- 1 GATEWAY (GTWY):
 - Up to 120 PV modules
 - Modules must be within 10m-15m (33-50 ft.) from the GTWY, depending on roof topology and material

For further information [CLICK HERE](#)

CCA AND GTWY CALCULATOR:

For the number of CCs and GTWYs required for your project [CLICK HERE](#)

1. SYSTEM OVERVIEW & PRODUCT DESCRIPTION



TS4-M: MONITORING: The TS4-M provides continuous system-wide monitoring for fleets to make customer support and fleet workflow on track



Monitoring

TS4-S: SAFETY: The TS4-S provides the necessary safety and monitoring services required by municipalities



Monitoring



Safety

TS4-O: OPTIMIZATION: In addition to safety, monitoring, and PV2.0 synchronization, TS4-O optimizes each PV module when its performance is affected by shade or mismatch



Monitoring



Safety



Optimization



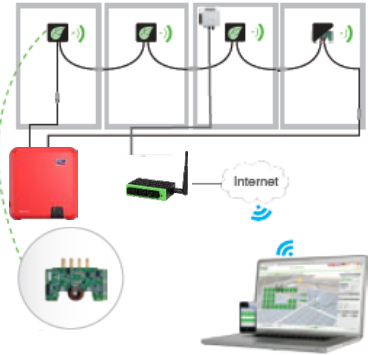
ELECTRICAL INSTALLATION (STEP 2 – STEP 4)



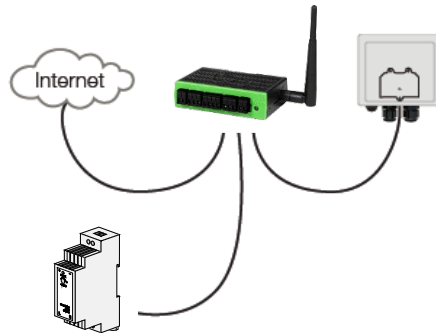
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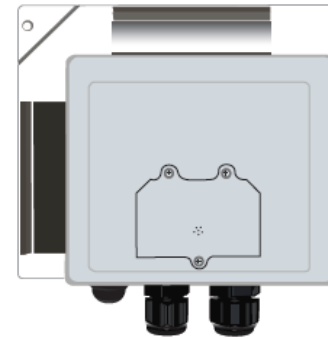
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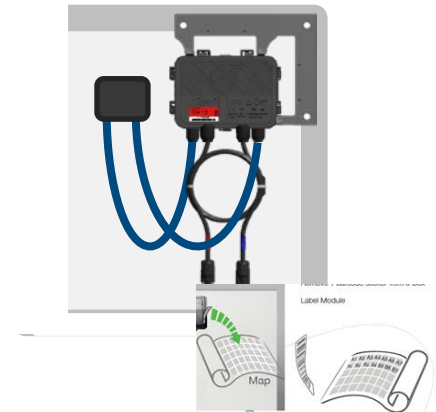
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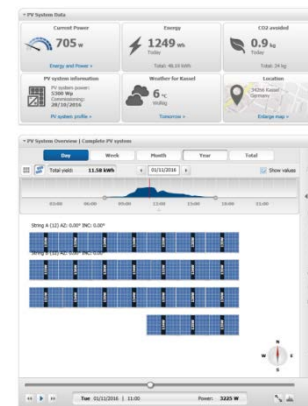
5. Configuring the System Online



6. Commissioning



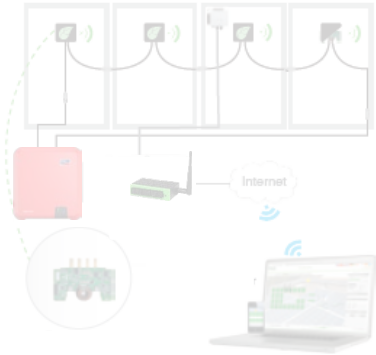
7. Registration Sunny Portal



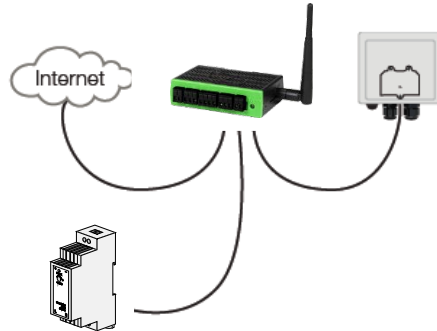
QUICK INSTALLATION GUIDE



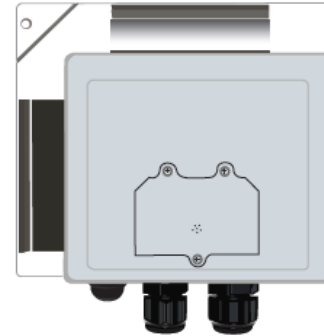
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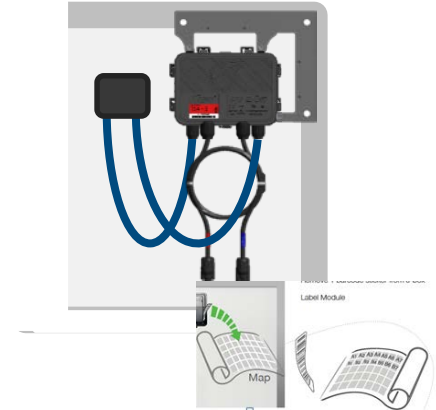
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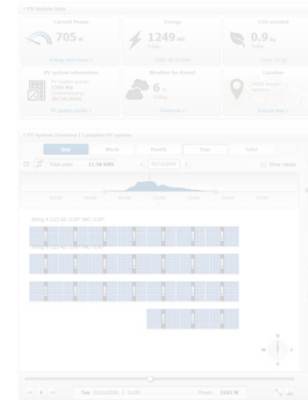
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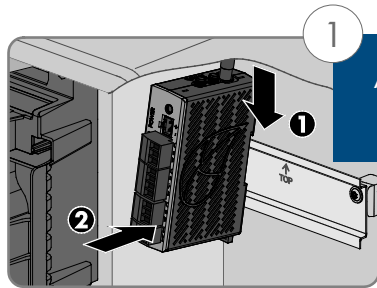
6. Commissioning



7. Registration Sunny Portal

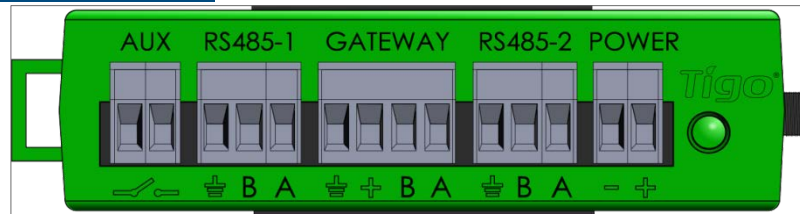


2. INSTALLING THE CLOUD CONNECT ADVANCED (CCA)



1
Attach CCA and power supply to DIN rail

2
Connect GTWY and power cables



2a
Network
Wired Ethernet and WLAN connections

2c
Gateway
Plug in GTWY(s) cable after all the GTWY(s) are connected in series (next page)

2b
Power Supply
24Vdc input

Wireless Capabilities
Use WLAN for your Internet connection and for commissioning with a smartphone

WHERE TO PLACE:

- On a wall or beam
- Next to the inverter
- Out of direct sunlight

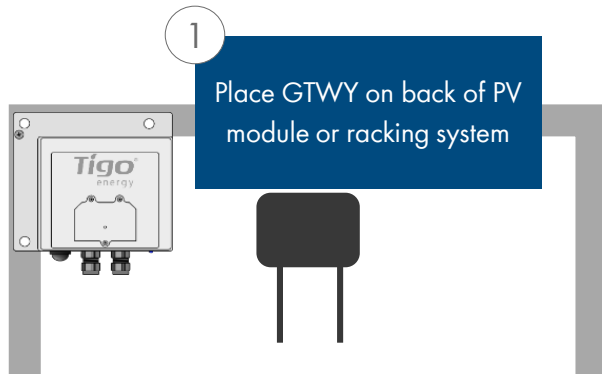
3 CONNECTIONS:

1. Internet connection, using one of the options:
 - Ethernet Port
 - Built in WLAN
 - WLAN connection is configured using the Tigo SMART app
2. Power supply:
 - DIN Rail Power Supply
3. Gateway (GTWY)
 - More on RS485 cables in the next page

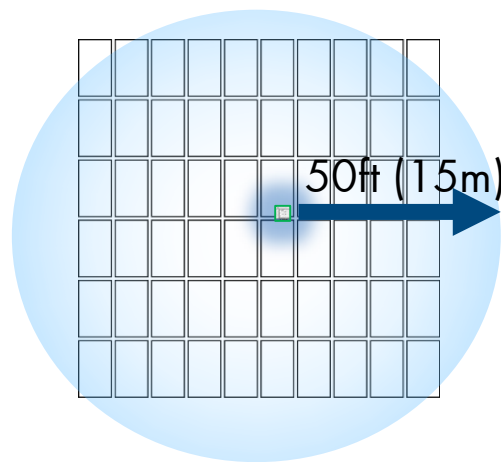
Complete CCA menu options in step 6
"Commissioning"

*In case CCA is mounted in a metal enclosure, extend this antenna out of the box in order to use WLAN as an Internet connection

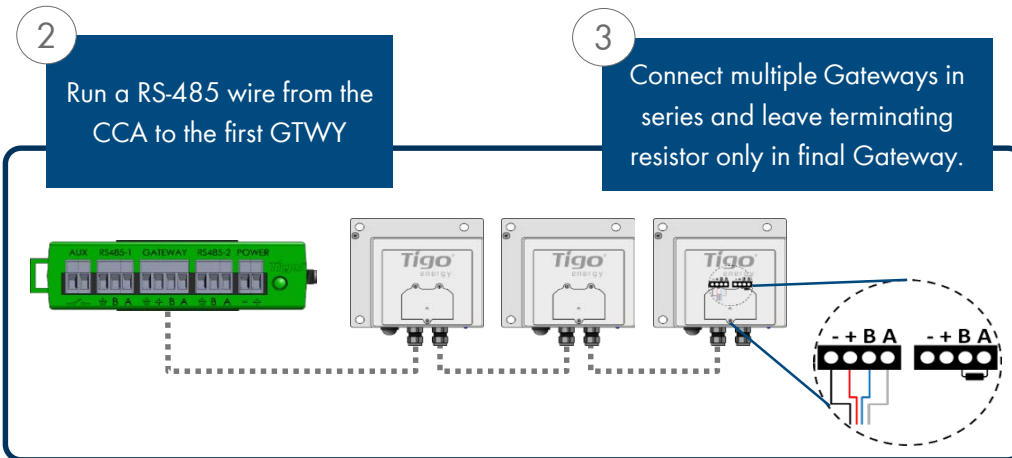
3. INSTALLING GATEWAYS (GTWY)



Gateway attaches to module frame using provided bracket



Locate Gateway near center of array or each sub-array



Installation:

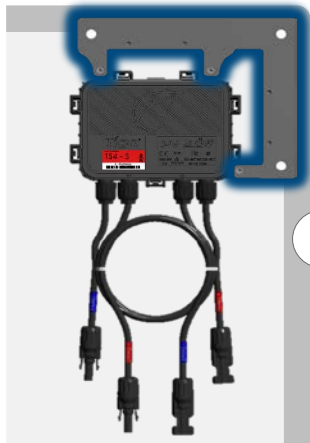
1. Connect all GTWY cables before powering on Cloud Connect
2. Install GTWY on back of PV module using provided bracket or bolt to the racking system
3. Power on Cloud Connect Advanced and perform Gateway test from Tigo SMART App

RS-485 communication cable is recommended.
2 twisted pair, sunlight resistant or direct burial

More Information:

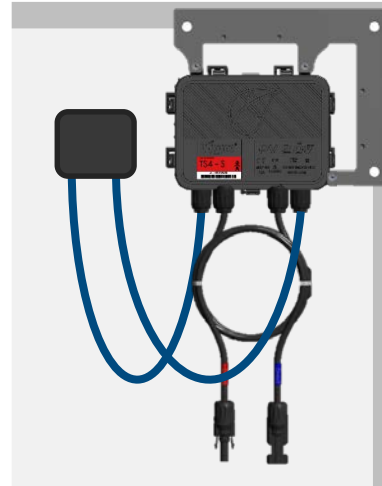
- [Gateway Hardware Guide](#)
- [Gateway Placement Guide](#)
- [Communication Cable Guide](#)

4. INSTALLING & MAPPING: TS4-R



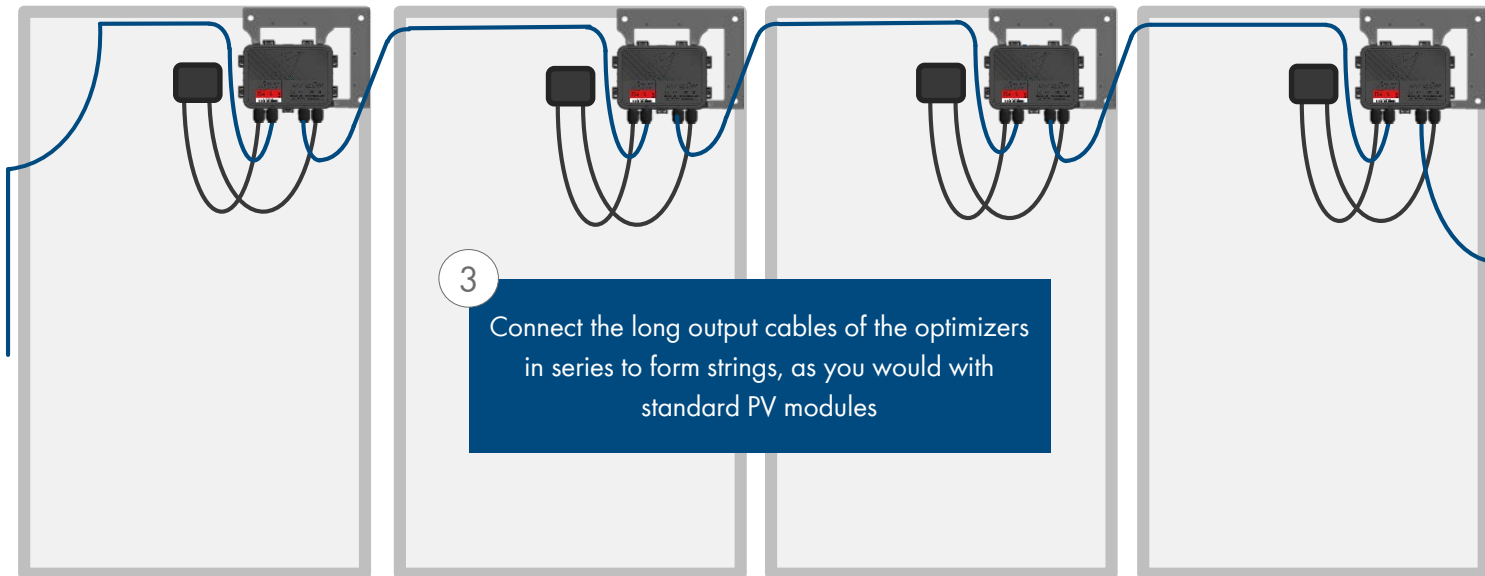
1

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



2

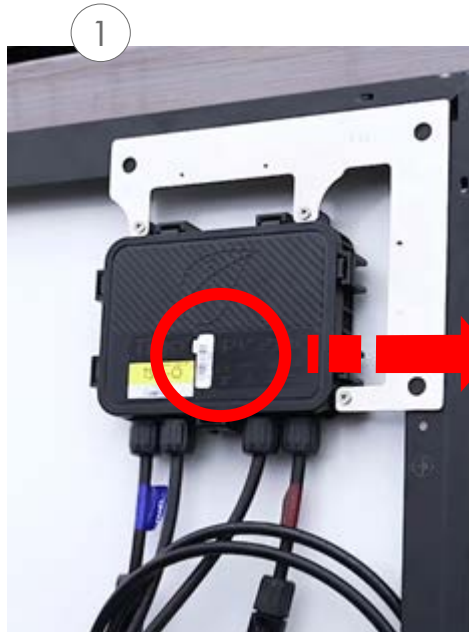
Connect the PV cables from the module to the short leads of the TS4-R



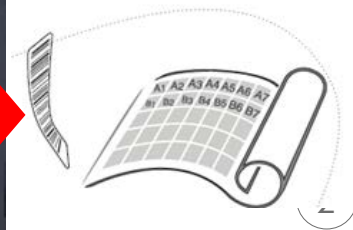
3

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

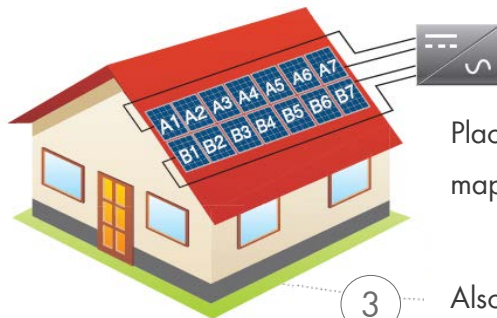
4. INSTALLING & MAPPING: TS4-R



Remove 1 barcode sticker from the TS4 junction box or add-on



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.



Place PV modules in a way matches the map you made using barcodes.

Also record the serial numbers of the GTWY(s)

TEMPLATES:

Create your site map 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

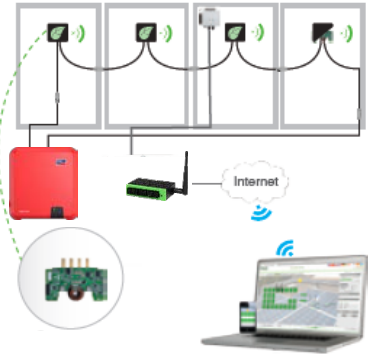
COMMISSIONING (STEP 5 – STEP 6)



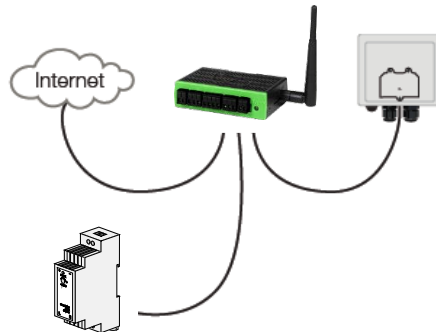
QUICK INSTALLATION GUIDE



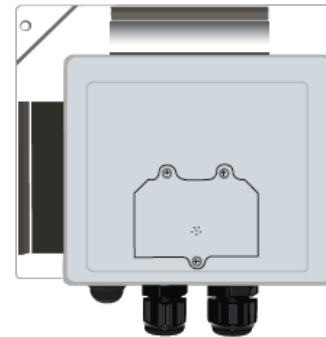
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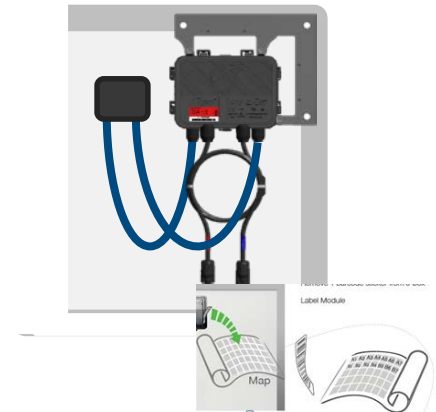
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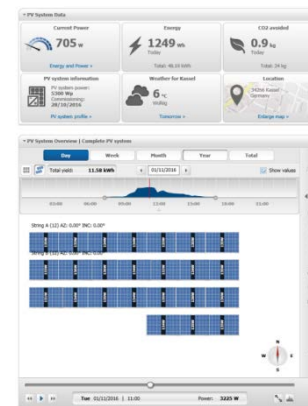
5. Configuring the System Online



6. Commissioning



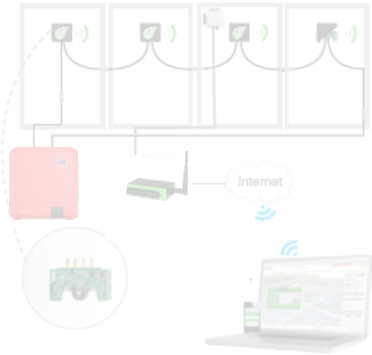
7. Registration Sunny Portal



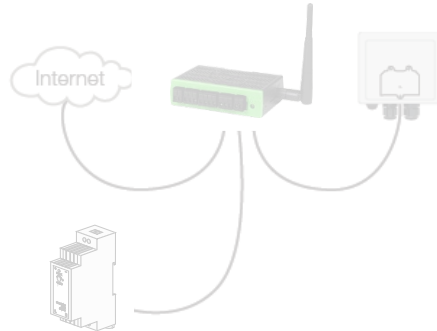
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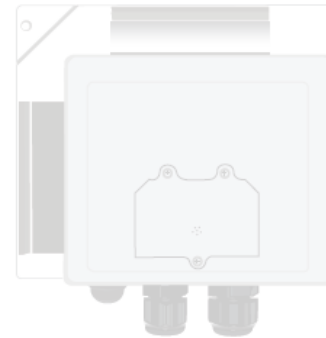
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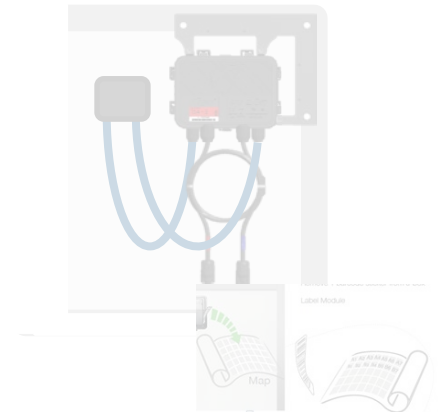
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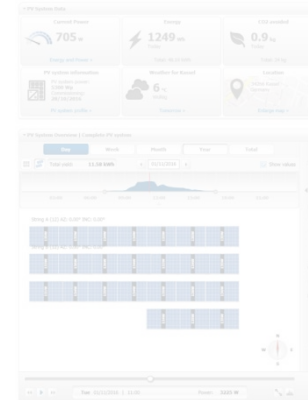
5. Configuring the System Online



6. Commissioning



7. Registration Sunny Portal



5. CONFIGURE SYSTEM ONLINE



- Go to www.Tigoenergy.com
- Create Installer account (if not already existing)
- To begin online configuration process enter installation details, such as location and equipment type*
- 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

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

1

2

3

Follow the wizard instructions

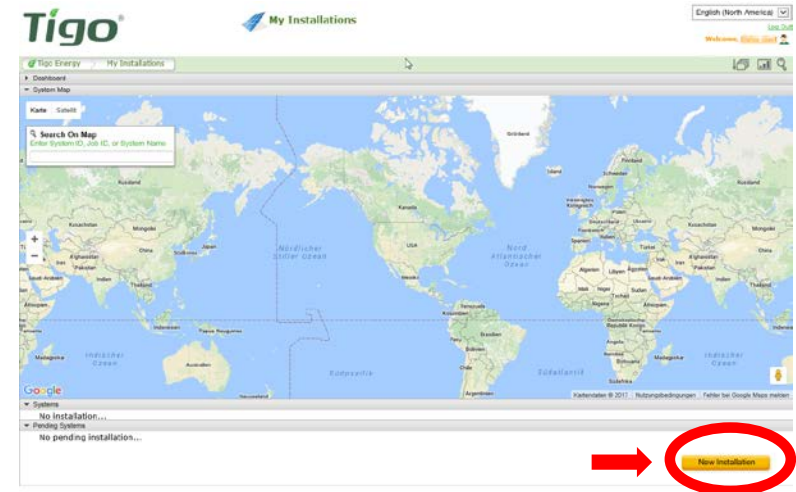
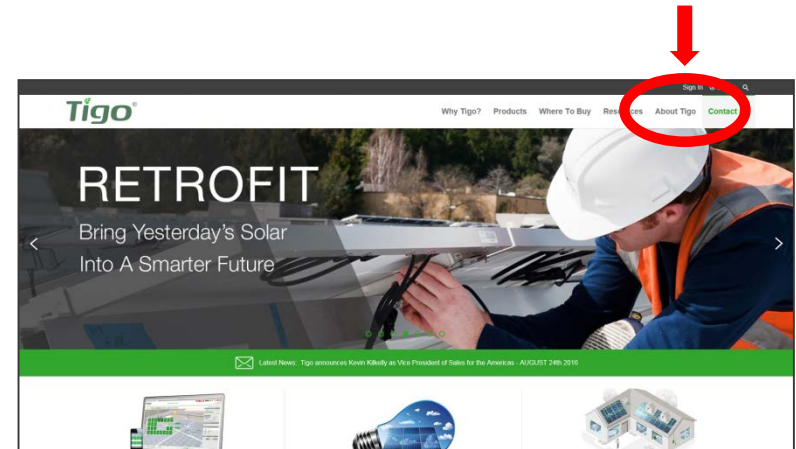
Click New Installation on

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

5. CONFIGURE SYSTEM ONLINE



- To configure a system online, log in to 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*
- Have your site map or string list with bar codes ready



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

5. CONFIGURE SYSTEM ONLINE



Follow the steps on the installation wizzard*:

- 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



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

6. COMMISSIONING



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

To commission the Tigo equipment there are 3 simple steps that need to 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.

This step requires an Internet connection.



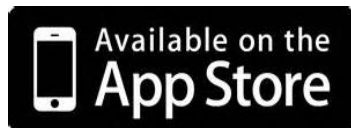
6. COMMISSIONING

⇒ Look for the Tigo SMART APP



Requires active mobile data connection

- 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



6. 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

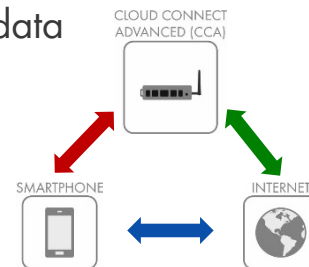
This message implies that the phone should be connected to the Internet and have mobile data enabled

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

Connection between Cloud Connect Advanced and Internet



Example of a standard WLAN network data connection

Example of an available Cloud Connect Advanced WLAN connection



6. COMMISSIONING

⇒ Enter Your Username and Password, and press [Login]



Requires active mobile data connection

If you do not have one, create a new account here:

<https://installations.tigoenergy.com/base/login/>

Tigo®

English (North America) ▾

New Installer? Sign Up

Click Here to View Existing Installations

See Dramatic ROI and Safety Improvements

NEW!

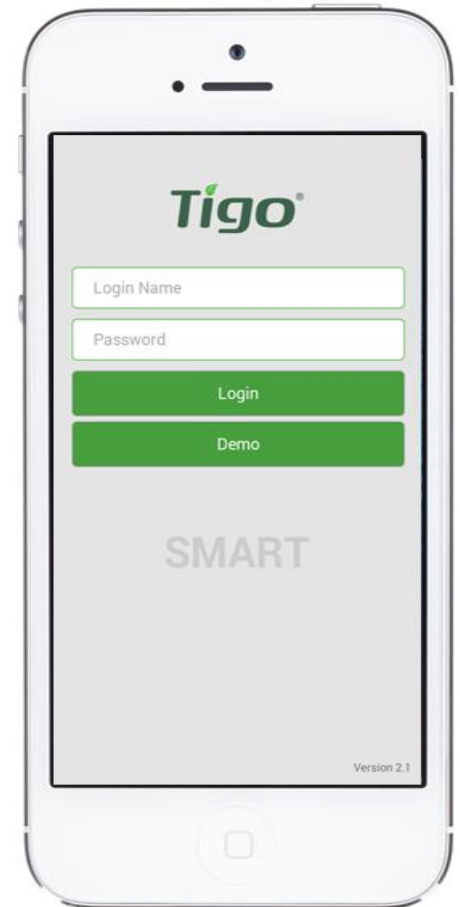
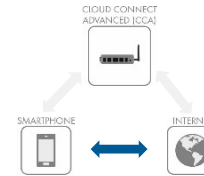
2.2MW install by Talmage Engineering

Login ID

Password

Forgot Password

Login



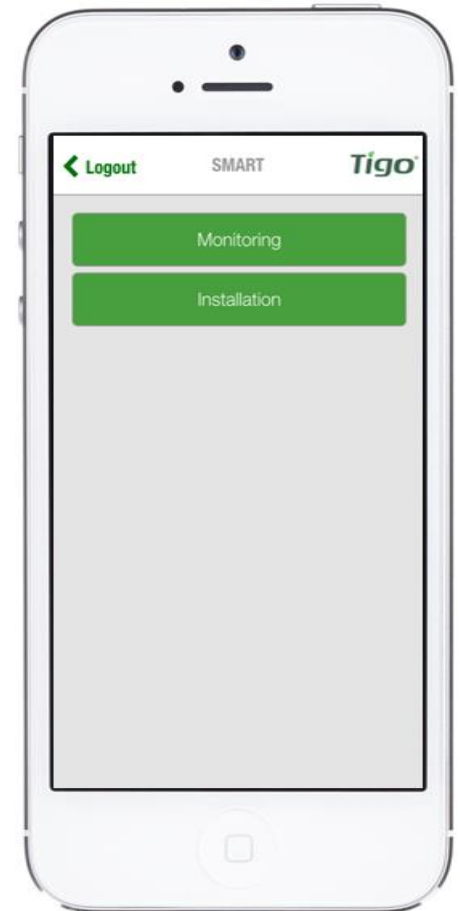
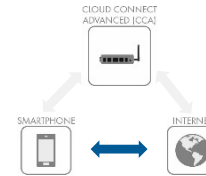
* Log in before connecting to Cloud Connect via WLAN

6. COMMISSIONING

⇒ Press [Installation]



Requires active mobile data connection

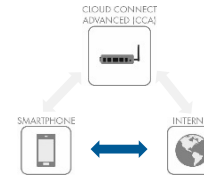


6. COMMISSIONING

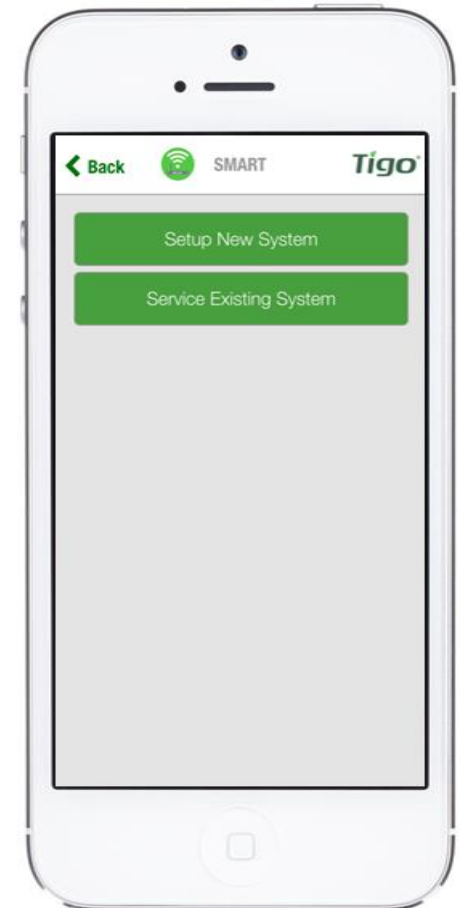
⇒ [Setup New System] or [Service Existing System]



Requires active mobile data connection



- To proceed with a new installation, select [Setup New System]
- Select [Service Existing System] to service a Cloud Connect that has already been configured



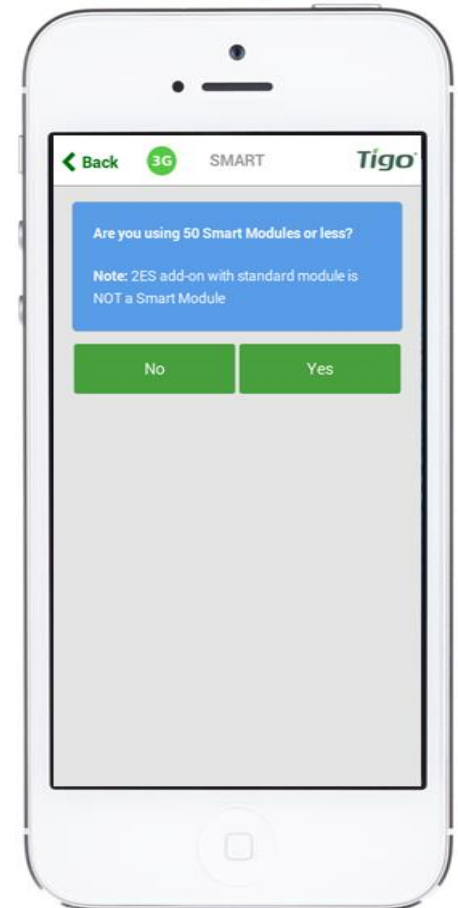
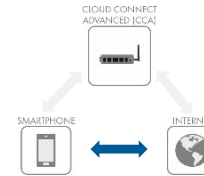
6. COMMISSIONING

⇒ Confirm System Size



Requires active mobile data connection

- Systems using fewer than 50 Smart Modules are eligible for automatic configuration – no barcodes needed!
- Selecting [No] will provide a link to the Tigo Energy website and allows you to proceed to Setup Internet Connection



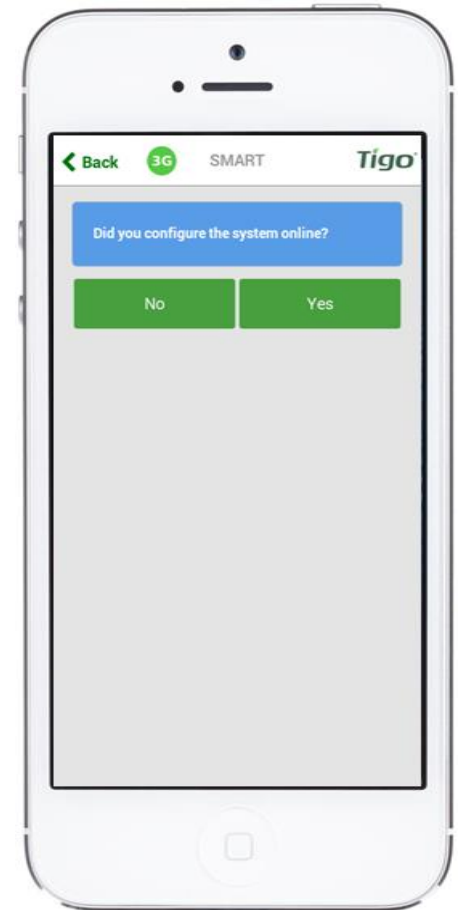
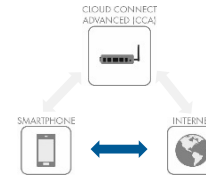
6. COMMISSIONING

⇒ Confirm Configuration



Requires active mobile data connection

- If the system has already been configured online, select [Yes] and then connect your Smartphone to the Cloud Connect hotspot to proceed
- Selecting [No] will provide options for creating a new system



6. COMMISSIONING

⇒ Press [Create New System]



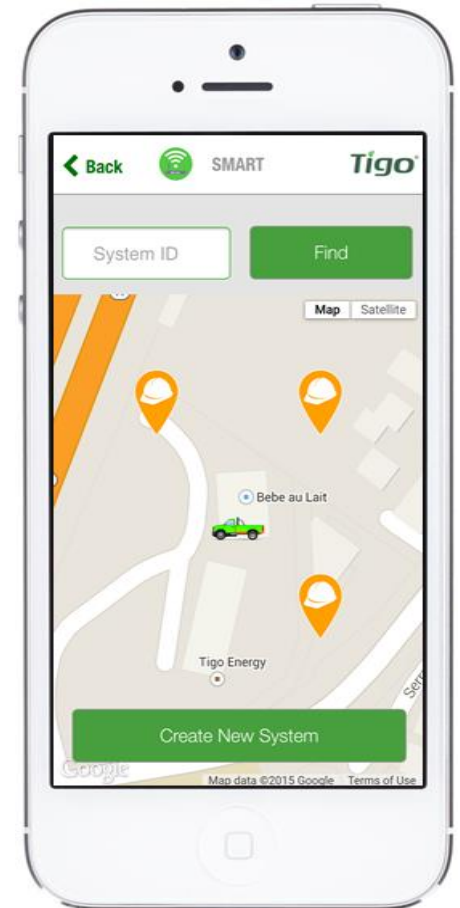
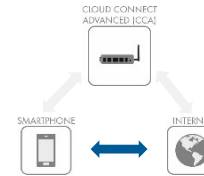
Requires active mobile data connection

To complete the configuration for an existing system ID

- select the available Cloud Connect Advanced from a map of nearby systems*

Or

- select [Create New System] to create a new system ID



*Map requires Location enabled on Smartphone

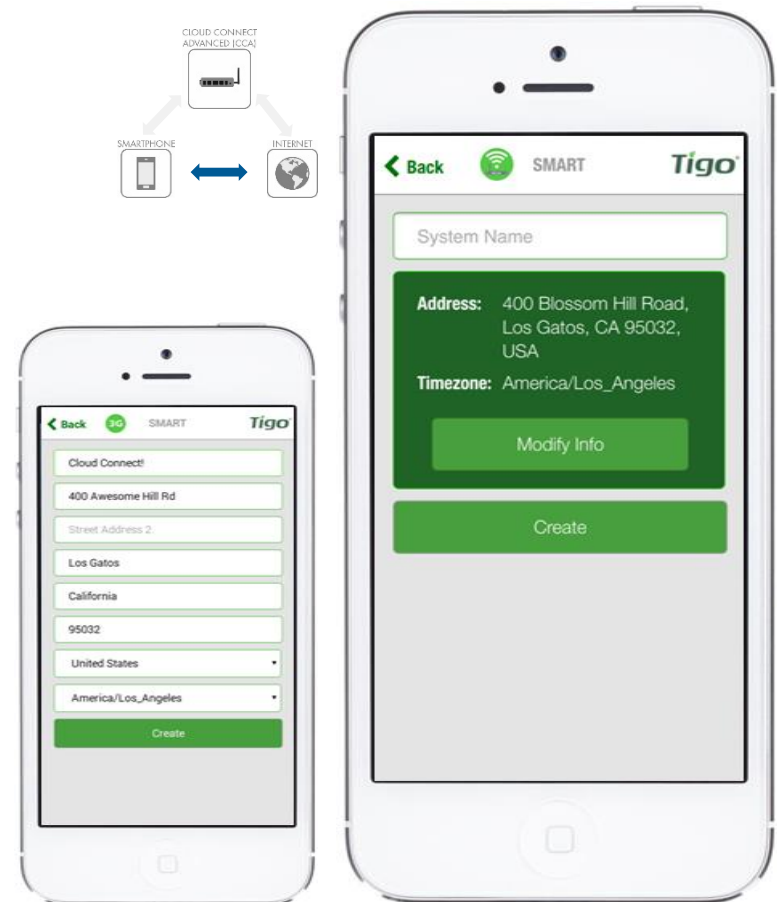
6. COMMISSIONING

⇒ Enter system name and verify address and time zone



Requires active mobile data connection

- If either the address or the time zone is incorrect, press [Modify Info] and enter the details
- Once done, press [Create]



6. COMMISSIONING

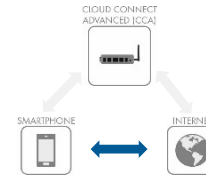
⇒ Enter the number of gateways and number of smart modules



Requires active mobile data connection

Reminder:

- Systems with more than 50 Smart Modules must be configured online
- Network Test and Discovery can be run from the Tigo SMART app once the system is configured



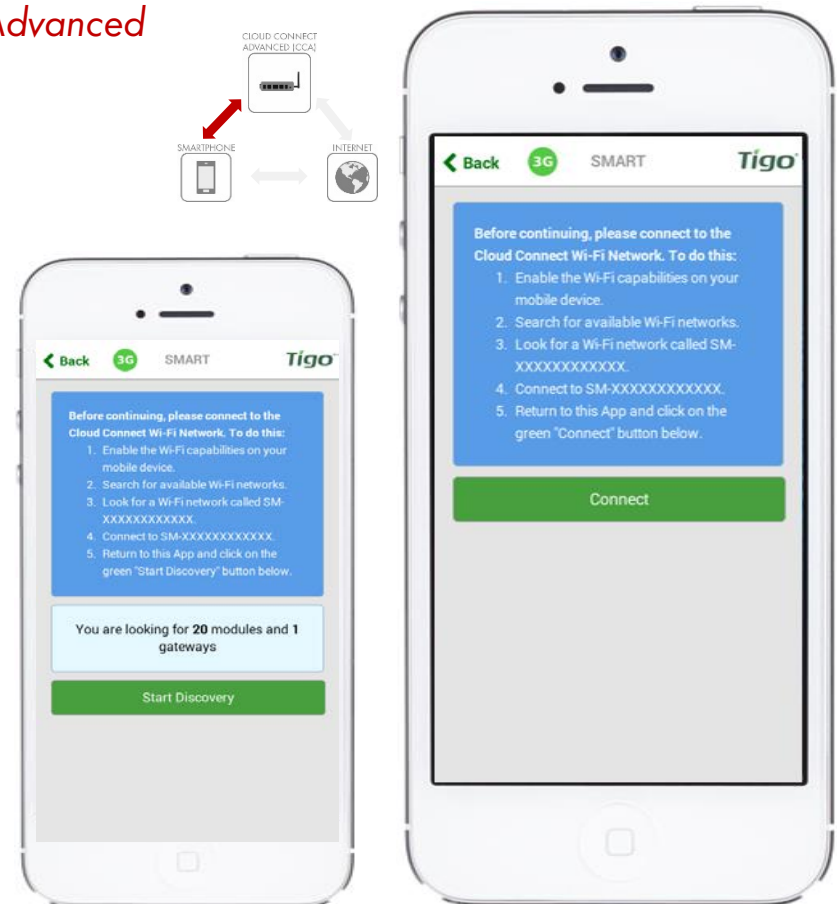
6. COMMISSIONING

⇒ Connect your smartphone to the cloud connect advanced via WLAN



Requires direct WLAN connection to Cloud Connect Advanced

- Enable WLAN in your Smartphone settings
- Locate a WLAN network named SM-XXXXXXXXXXXX and connect to it
- Return to the app and press [Start Discovery]



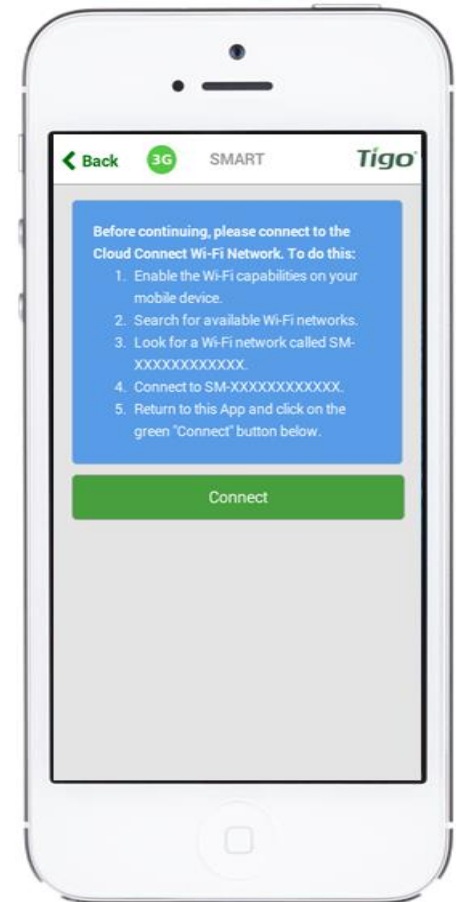
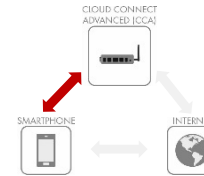
6. COMMISSIONING

⇒ Connect your smartphone to the cloud connect advanced via WLAN
(existing systems)



Requires direct WLAN connection to Cloud Connect Advanced

- Enable WLAN in your Smartphone settings
- Locate a WLAN network named SM-XXXXXXXXXXXX and connect to it
- Press [Connect] to continue



6. COMMISSIONING

⇒ Main Menu - Options

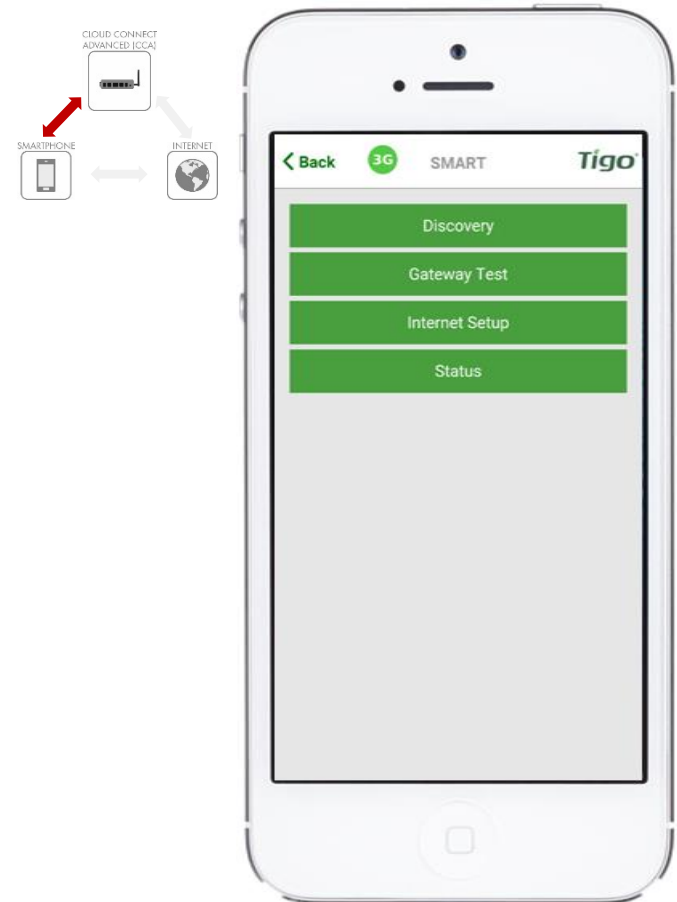


Requires direct WLAN connection to Cloud Connect Advanced

Available Commands:

- **Discovery** – Scan for Gateways and Smart Modules
- **Gateway Test** – Perform a test on the Gateway connection
- **Internet Setup** – Configure and test an Ethernet or WLAN connection
- **Status** – View system status and Discovery results

App version 2.2.2



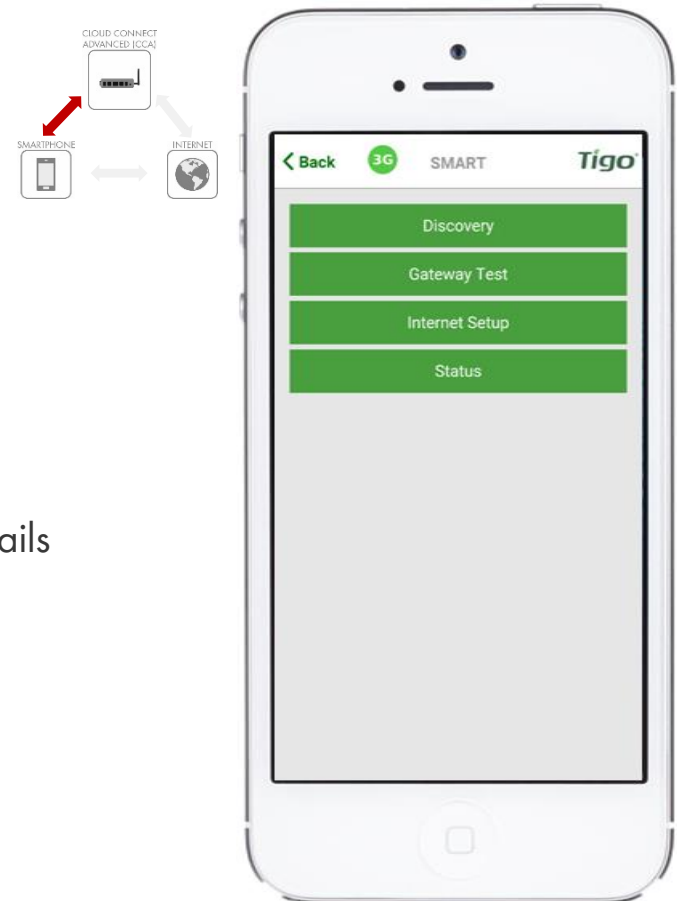
6. COMMISSIONING

⇒ Discovery Process



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Discovery]
- Enter number of Gateways and smart modules
- Press [Start] to begin Discovery
- Status shows a progress bar with the option to view more details



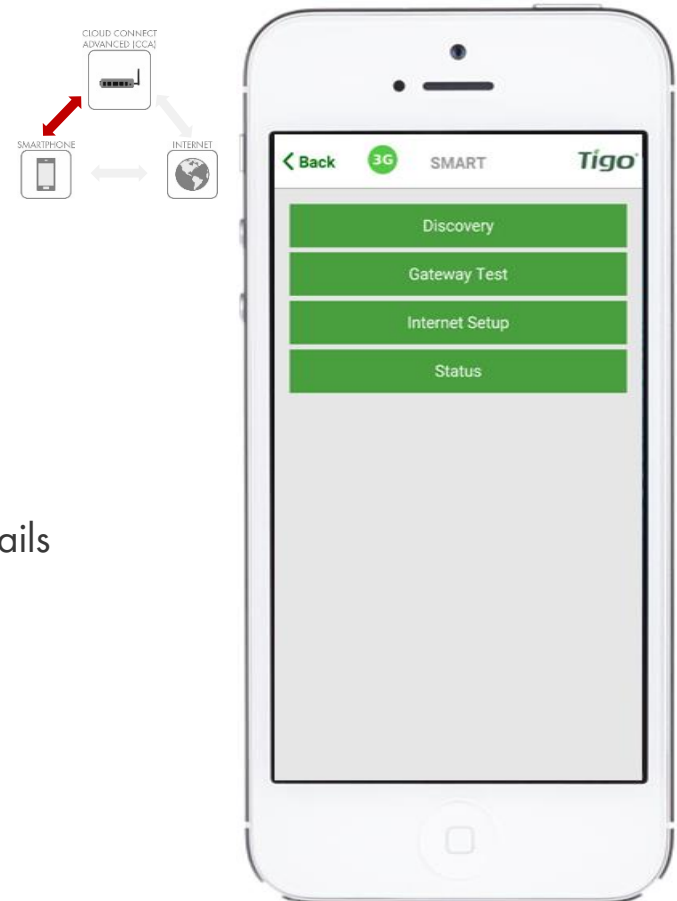
6. COMMISSIONING

⇒ Discovery Process



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Discovery]
- Enter number of Gateways and smart modules
- Press [Start] to begin Discovery
- Status shows a progress bar with the option to view more details



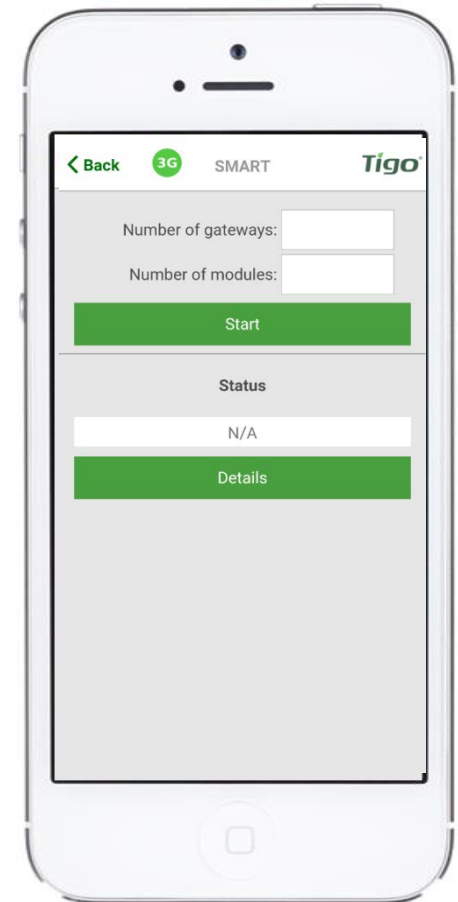
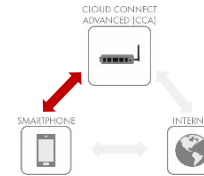
6. COMMISSIONING

⇒ Discovery Process



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Discovery]
- Enter number of Gateways and smart modules (if not prepared already online)
- Press [Start] to begin Discovery
- Status shows a progress bar with the option to view more details

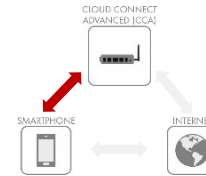


6. COMMISSIONING

⇒ Discovery of Gateways and Modules



Requires direct WLAN connection to Cloud Connect Advanced



After the Gateways have been found, you can continue with the configuration process while discovery is running in the background



6. COMMISSIONING

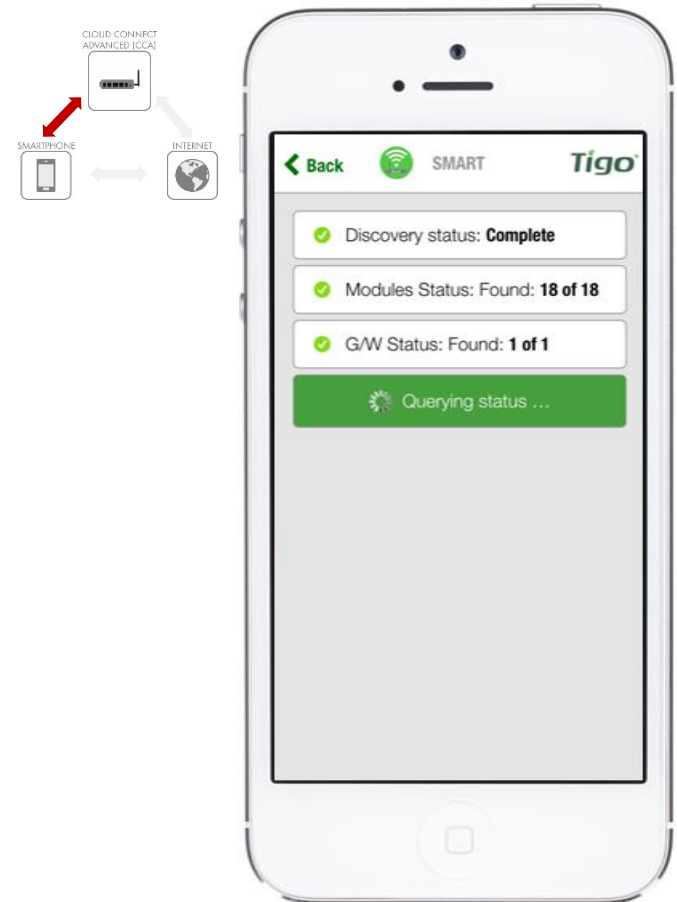
⇒ Once Discovery is Complete



Requires direct WLAN connection to Cloud Connect Advanced

You'll see a confirmation that:

- Discovery Status: Complete
- All modules have been found (e.g. 18 of 18)
- All Gateways have been found (e.g. 1 of 1)



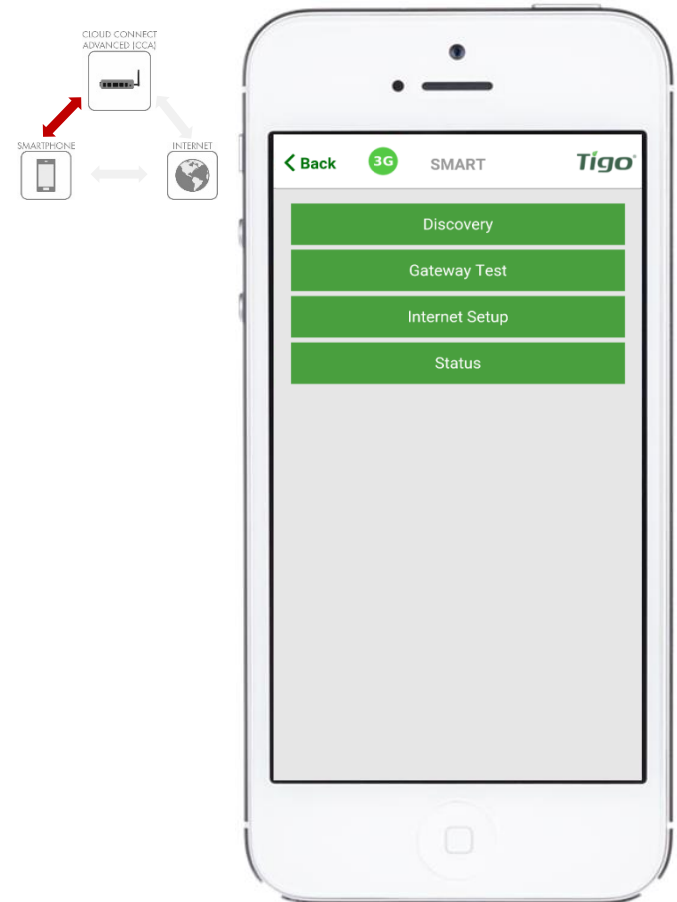
6. COMMISSIONING

⇒ Perform Gateway Test



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Gateway Test]
- Run Gateway Test
- Wait while Cloud Connect scans for Gateways
- View results of test



App version 2.2.2

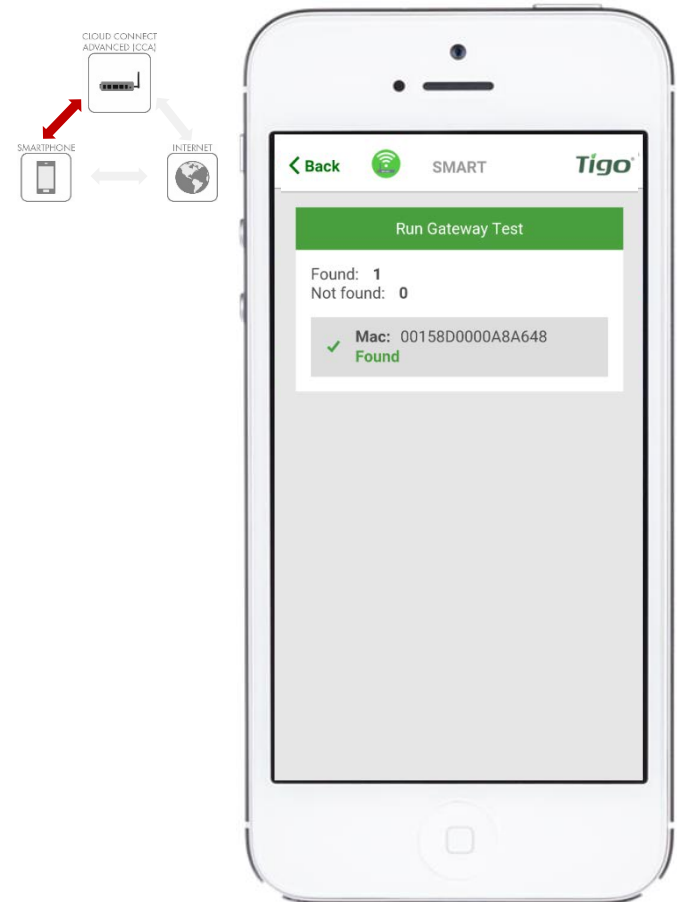
6. COMMISSIONING

⇒ Perform Gateway Test



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Gateway Test]
- Run Gateway Test
- Wait while Cloud Connect scans for Gateways
- View results of test



App version 2.2.2

6. COMMISSIONING

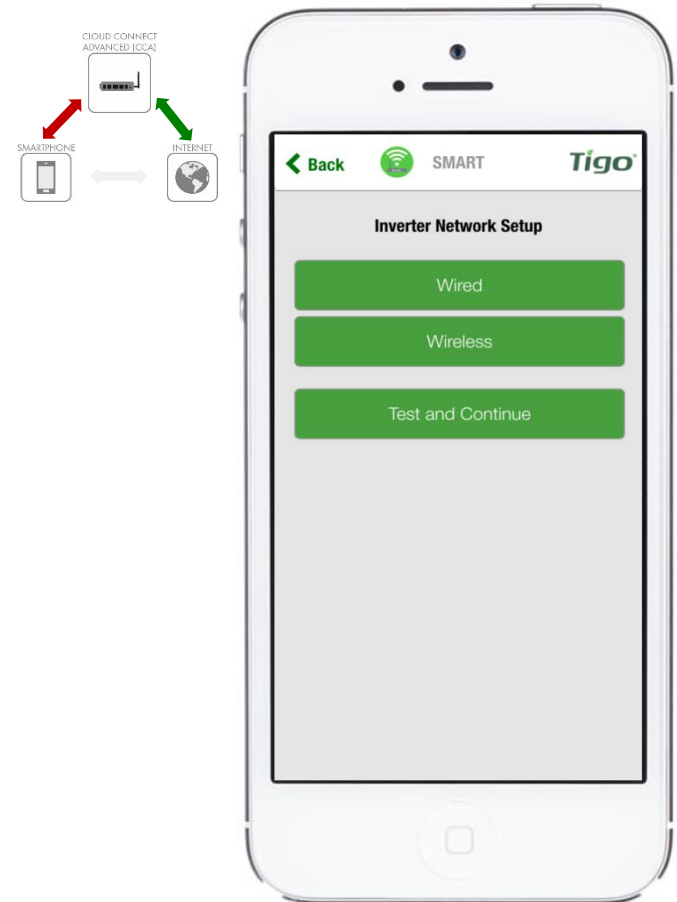
⇒ Next Step: Setup Internet Connection



Requires direct WLAN connection to Cloud Connect Advanced

Note: This can run in parallel to Discovery

- Select your preferred method of connecting to the Internet:
 - Wired: using Ethernet cable
 - Wireless: Using WLAN



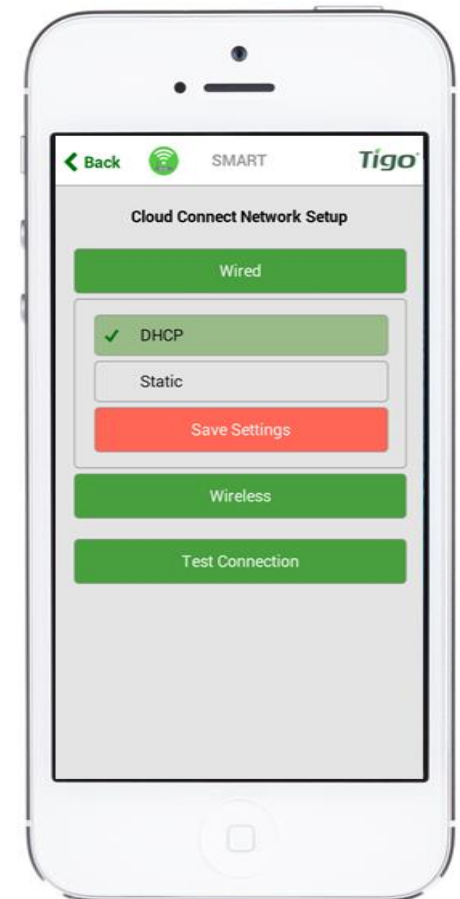
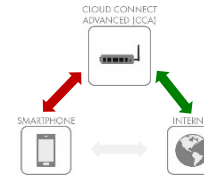
6. COMMISSIONING

⇒ Selecting Wired Internet Connection



Requires direct WLAN connection to Cloud Connect Advanced

- Open up the following screen
- The app will look for an available Internet connection automatically
- Scroll down and press [Test and Continue]
- Wired connections can be configured for Dynamic (DHCP) or Static IP in the app

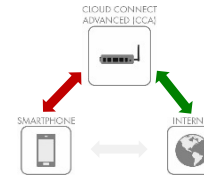


6. COMMISSIONING

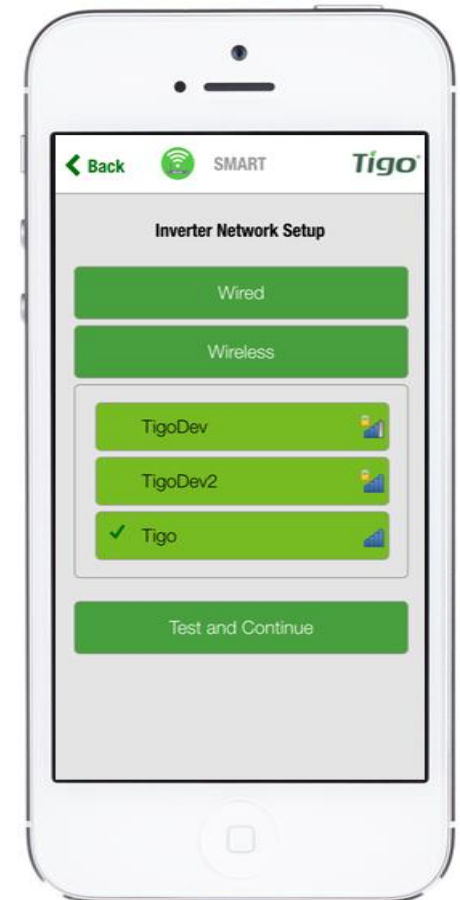
⇒ Selecting Wireless Internet Connection



Requires direct WLAN connection to Cloud Connect Advanced



- Opens up a screen showing the available wireless Internet connections
- Make sure you have the name and password for the home network
> Please note that WPS is not supported by the Cloud Connect
- After selecting a wireless network press [Test and Continue]

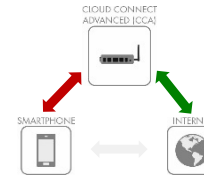


6. COMMISSIONING

⇒ Network Test Will Run for Several Seconds



Requires direct WLAN connection to Cloud Connect Advanced



- The Network Test can diagnose problems with the Internet connection
- Please note that when the Cloud Connect Advanced is mounted inside a metal enclosure, it may not receive a WLAN signal unless the antenna is mounted outside of the enclosure.



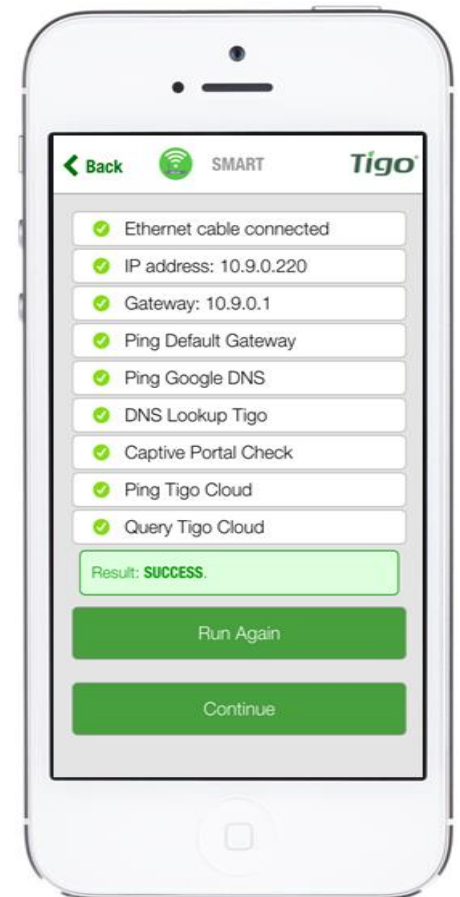
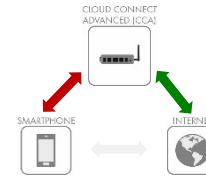
6. COMMISSIONING

⇒ And End Up with the Following Screen



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Continue]

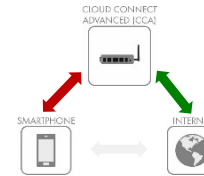


6. COMMISSIONING

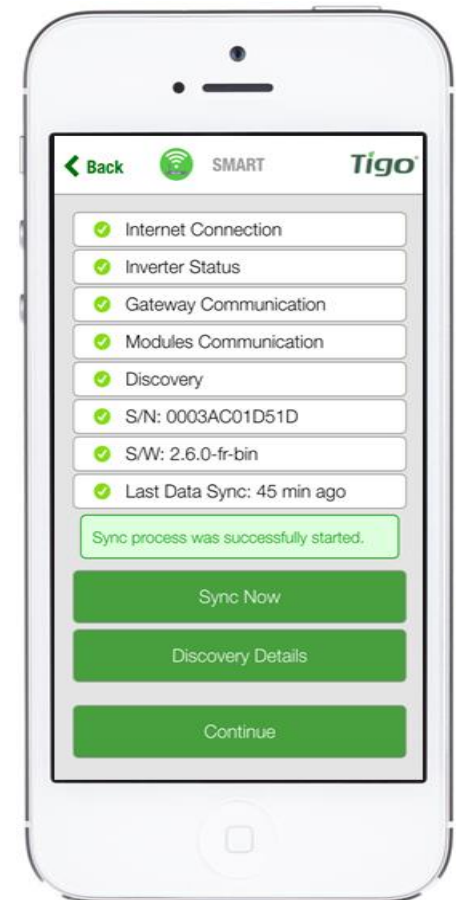
⇒ Network Test Complete



Requires direct WLAN connection to Cloud Connect Advanced



- At this point the configuration process is almost complete
- Press [Discovery Details] to make sure discovery process has found all Smart Modules

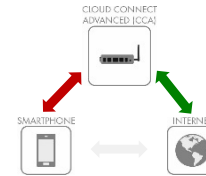


6. COMMISSIONING

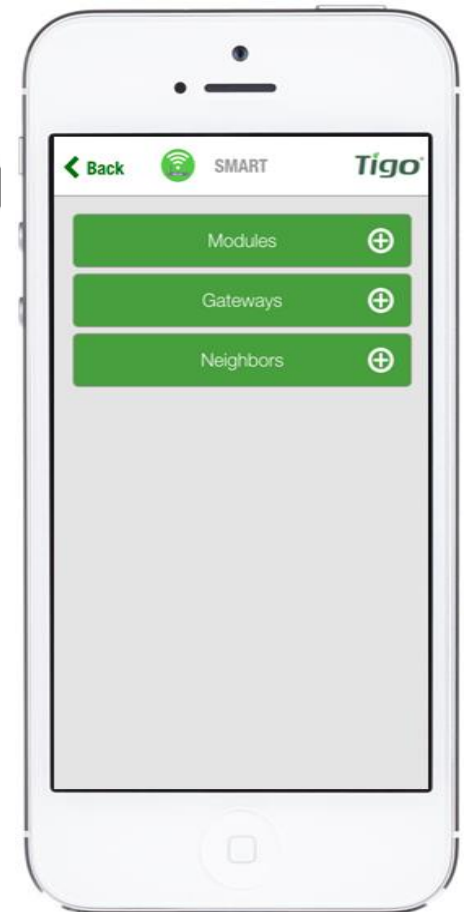
⇒ Discovery Details



Requires direct WLAN connection to Cloud Connect Advanced



- Once the Discovery process is complete, this screen will appear and display real time data collected from the Smart Modules, Gateways, and neighboring Smart Modules
- Expand the menus to view data



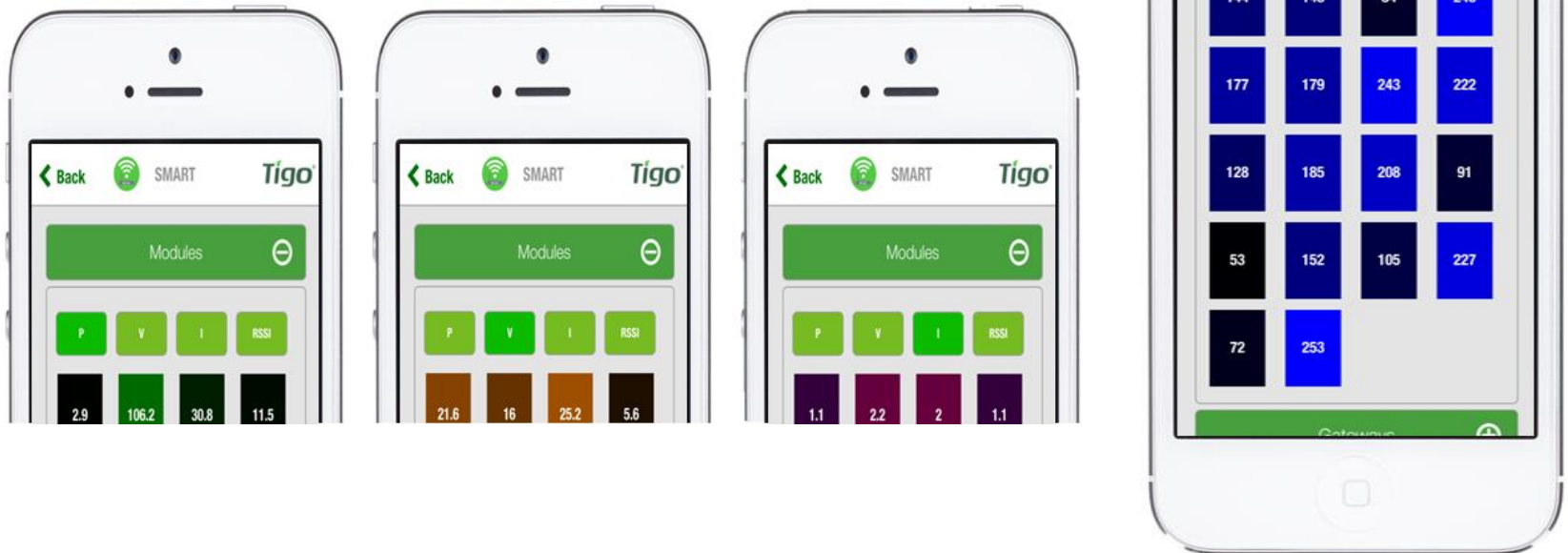
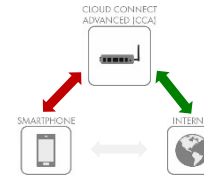
6. COMMISSIONING

⇒ Use the [Modules] Screen to Complete Commissioning



Requires direct WLAN connection to Cloud Connect Advanced

- Use the power (P), voltage (V), and current (I) views to make sure the smart modules are properly connected



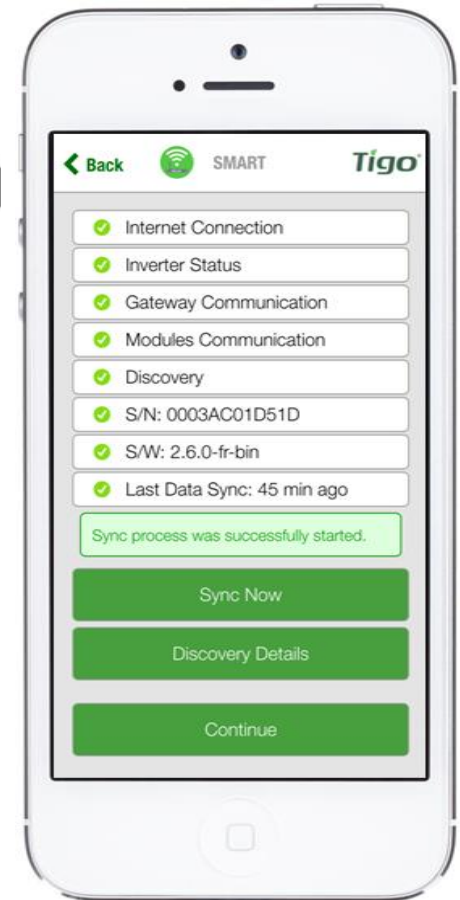
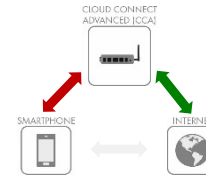
6. COMMISSIONING

⇒ Pressing [Back] will return to this page



Requires direct WLAN connection to Cloud Connect Advanced

- Press [Continue]



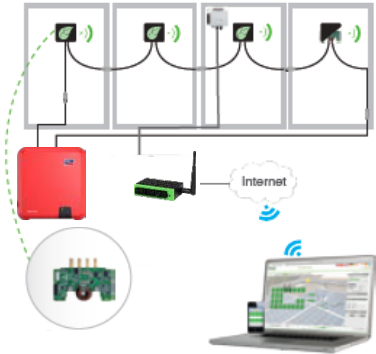
REGISTRATION SUNNY PORTAL (STEP 7)



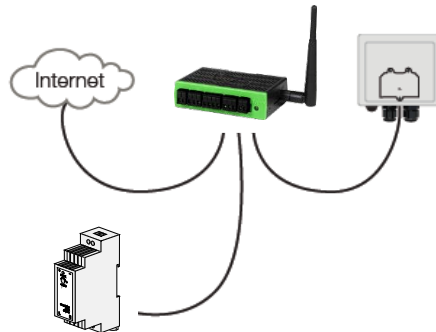
QUICK INSTALLATION GUIDE



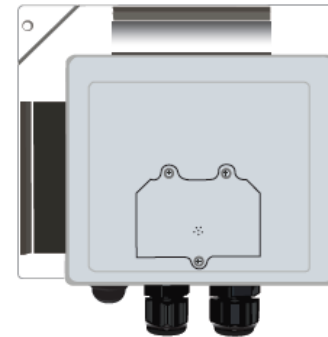
1. System Overview In Office Preparation



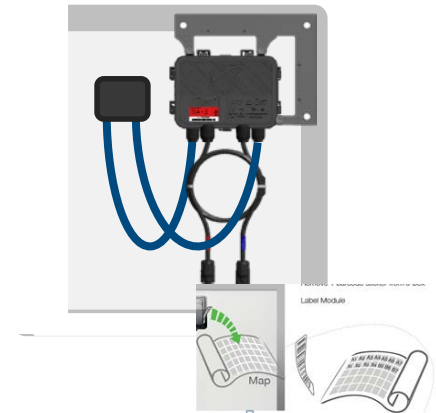
2. Installing Cloud Connect Advanced (CCA)



3. Installing Gateways (GTWY)



4. Installing and Mapping TS4-R



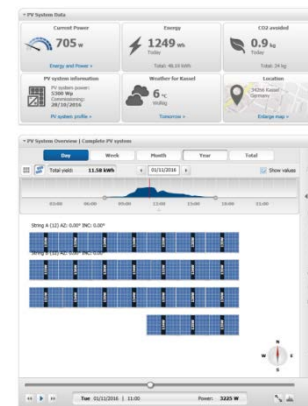
5. Configuring the System Online



6. Commissioning



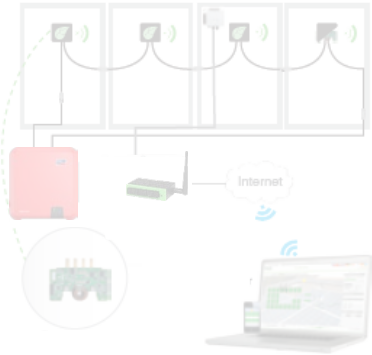
7. Registration Sunny Portal



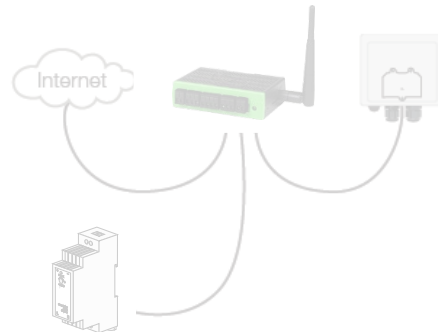
QUICK INSTALLATION GUIDE



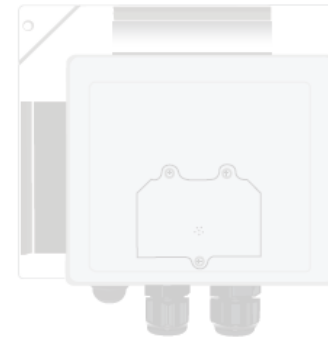
1. System Overview In Office Preparation



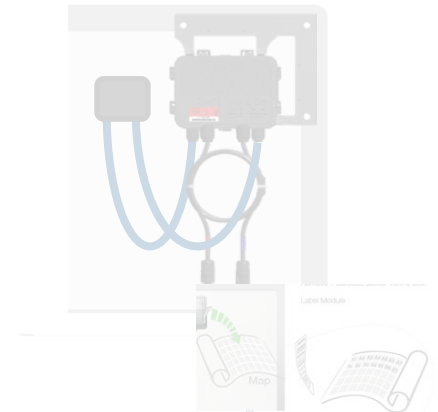
2. Installing Cloud Connect Advanced (CCA)



3. Installing Gateways (GTWY)



4. Installing and Mapping TS4-R



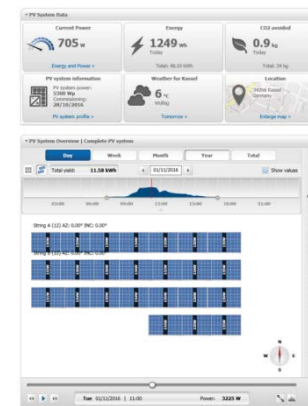
5. Configuring the System Online



6. Commissioning



7. Registration Sunny Portal

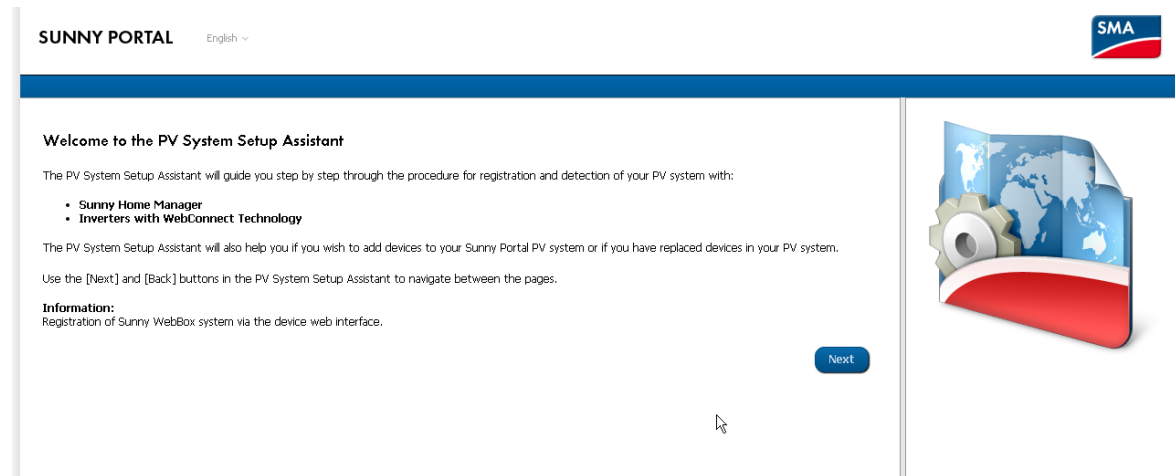
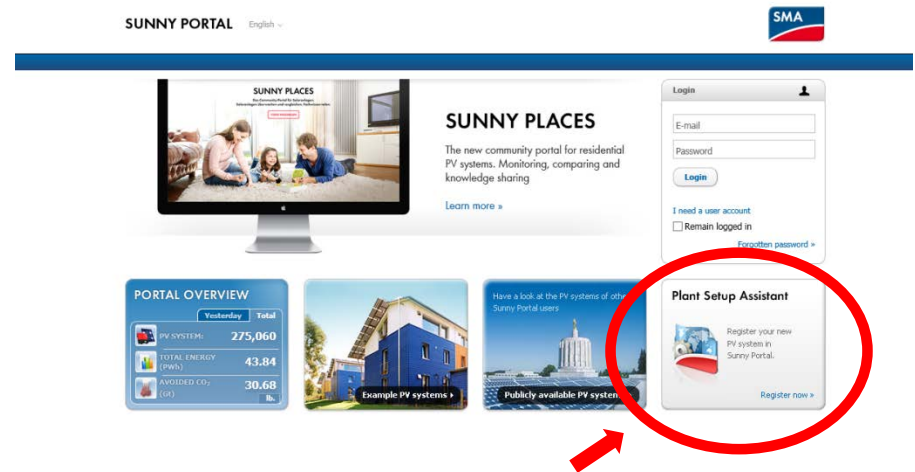


7. REGISTRATION SUNNY PORTAL – Plant setup assistant



Plant Setup Assistant

- Start commissioning at Sunny Portal via *Plant Setup Assistant*
 - For Sunny Home Manager Systems
 - For WebConnect Systems



7. REGISTRATION SUNNY PORTAL – Plant Setup assistant



Plant Setup Assistant

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

The image shows two screenshots of the Sunny Portal web interface. The top screenshot is the 'User Registration' screen, which is the first step in an 8-step process. It includes a progress bar at the top with steps 1 through 8. The main heading is 'User Registration'. Below it, there is a text prompt: 'If you are not already registered in Sunny Portal, select "I am not yet registered".' There are two radio buttons: 'I am not yet registered.' (which is currently selected) and 'I am already registered in Sunny Portal.' Below the radio buttons, there are two input fields: a text field for the email address and a password field with a strength indicator. A 'Forgotten Password?' link is located below the password field. At the bottom of the form, there are 'Back' and 'Next' buttons. The bottom screenshot is the 'Select PV system' screen, which is the second step in the 8-step process. It also has a progress bar at the top. The main heading is 'Select PV system'. Below it, there is a text prompt: 'You can create a new PV system or select an existing PV system in order to replace or add devices.' There are two radio buttons: 'Create a new PV system' (which is currently selected) and 'Add or replace devices'. Below the radio buttons, there is a 'PV System Properties' form with three fields: 'PV System Name: *', 'PV System Password: *', and 'Repeat Password: *'. Each field has a corresponding input box. A note at the bottom of the form states '* Mandatory field'. At the bottom of the screen, there are 'Back' and 'Next' buttons.

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

☐ Add or replace devices

PV System Properties

PV System Name: *

PV System Password: *

Repeat Password: *

* Mandatory field

Back **Next**

7. REGISTRATION SUNNY PORTAL – Plant Setup assistant



Plant Setup Assistant

- Enter inverters PIC & RID
- (repeat vor 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

BackNext

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

BackNext

7. REGISTRATION SUNNY PORTAL – Plant Setup assistant



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.

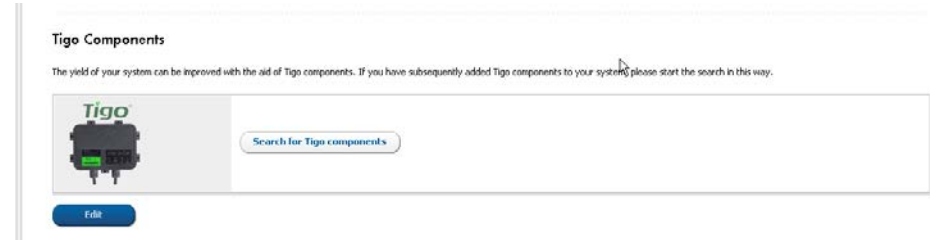
To the PV system

7. REGISTRATION SUNNY PORTAL – commissioning in already existing PV



PV System Properties

- Tigo commissioning in already existing PV systems is available on page „PV System properties“, tab „parameters“
- Searches first for Tigo system with same inverter serials (like Plant Setup Assistant)
- If no system found, search with Tigo User Credentials will be available (like Plant Setup Assistant)



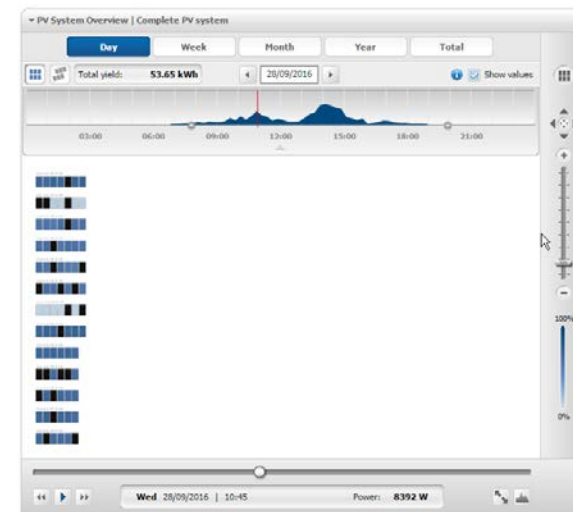
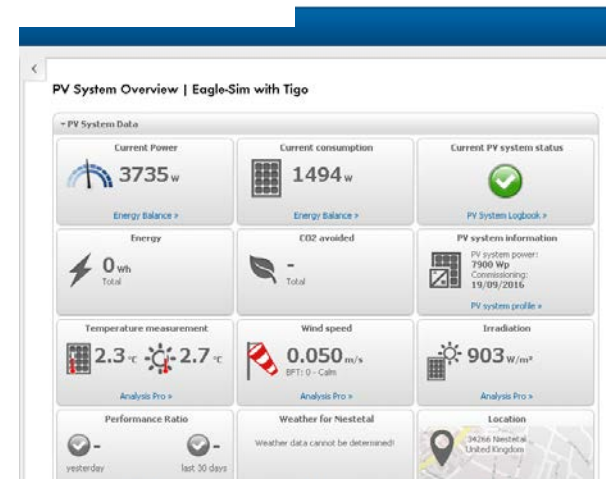
7. SUNNY PORTAL – VISUALIZATION



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. Configuration at SP is disabled.
- 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)



7. SUNNY PORTAL – VISUALIZATION



Analysis Pro

- Optimizer's DC-Power and DC-Voltage is available at Page *Analysis Pro*



7. SUNNY PORTAL – VISUALIZATION



Device Overview

- Cloud Connect and optimizers are listed in the Device Overview

Device Name	Serial Number	Product Group	Data Collection	Monitoring	Properties	Parameters	Logbook	Channel List
S066	S066	Cloud Connect						
A1	312764	TS4-R Smart Module						
A2	312765	TS4-R Smart Module						
A3	312766	TS4-R Smart Module						
A4	312767	TS4-R Smart Module						
A5	312768	TS4-R Smart Module						
A6	312769	TS4-R Smart Module						
A7	312770	TS4-R Smart Module						
B1	312772	TS4-R Smart Module						
B2	312773	TS4-R Smart Module						
B3	312774	TS4-R Smart Module						

ENERGY
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CHANGES



SOCIAL MEDIA
www.SMA.de/Newsroom

