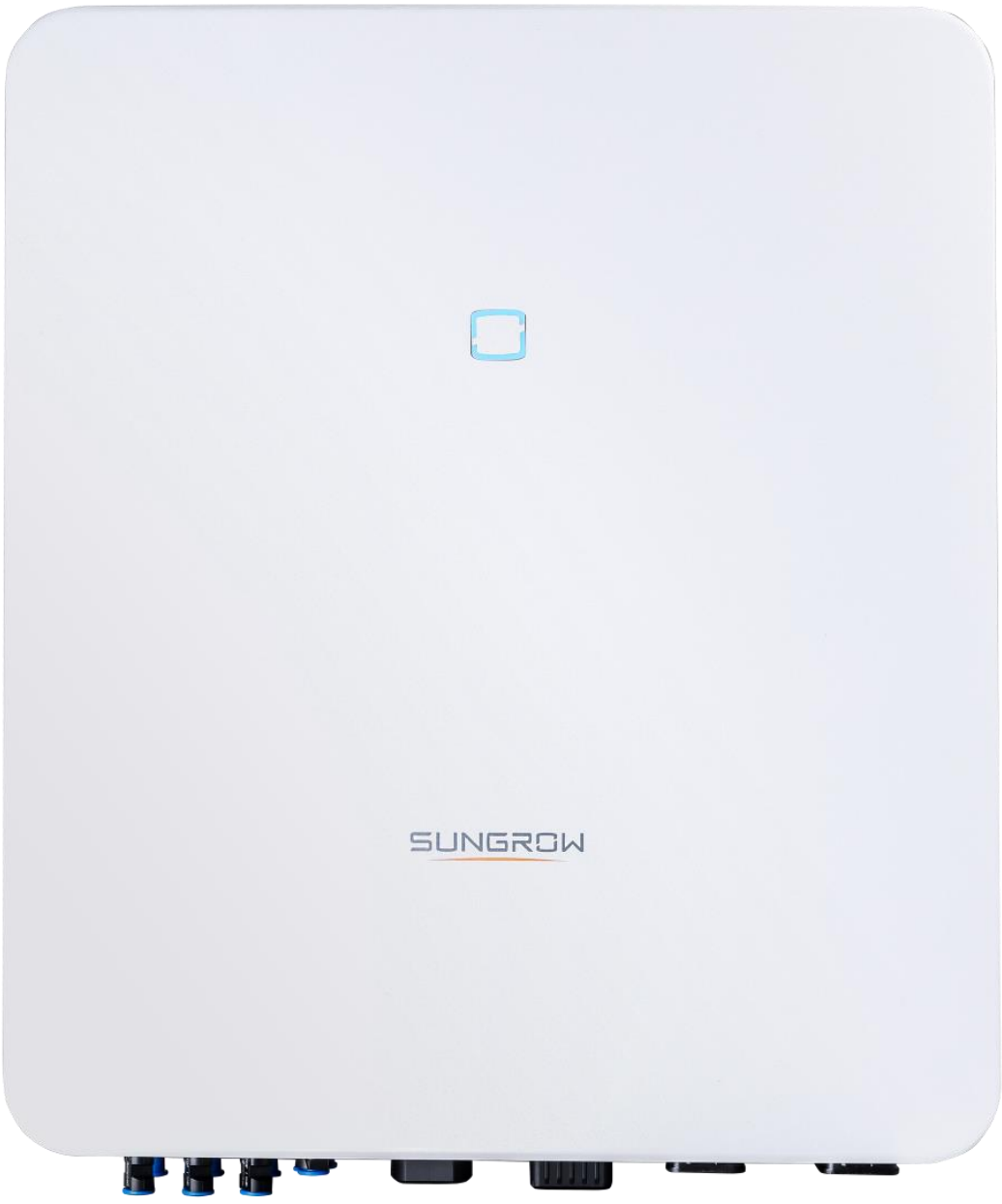
SUNGROW
Clean power for all

The 3-phase Hybrid

SH5.0RT / SH6.0RT / SH8.0RT / SH10RT

Frequently asked questions 2



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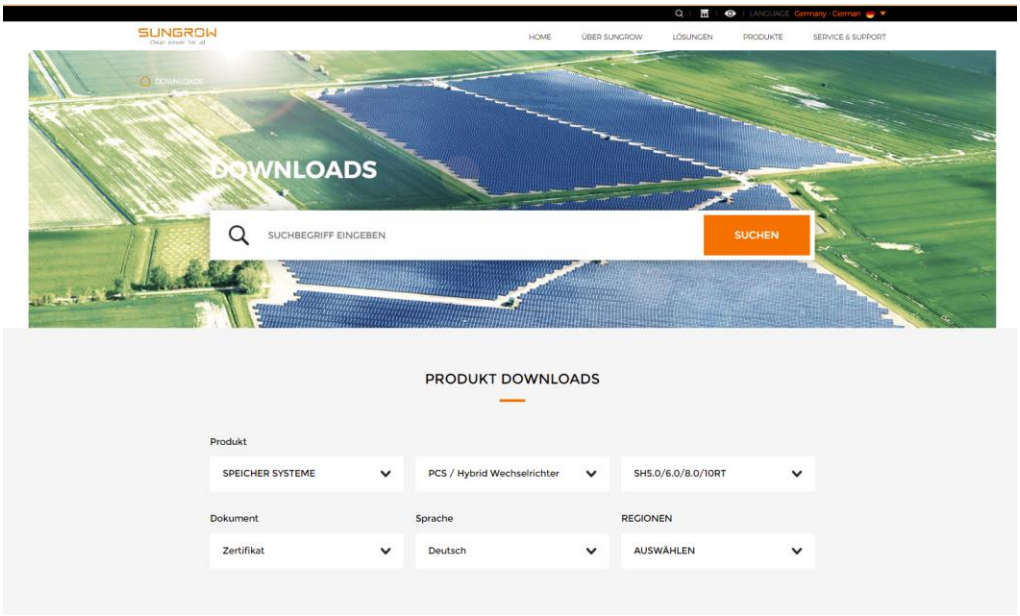
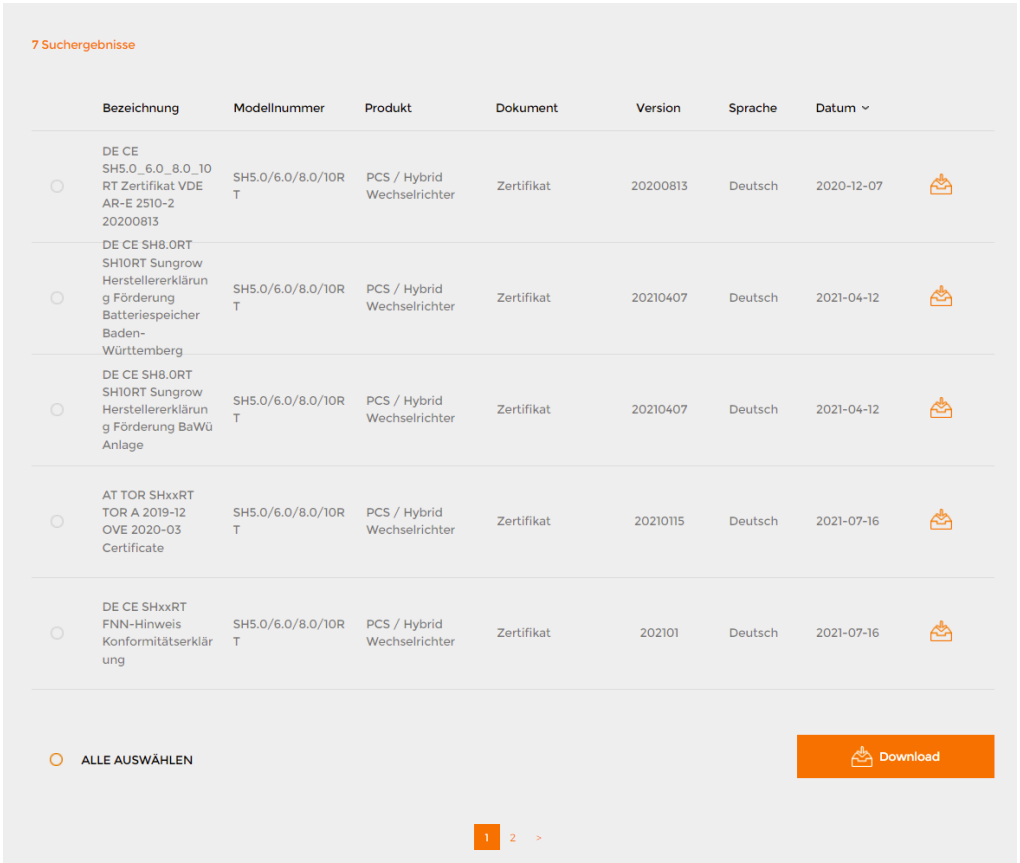
Where can all the certificates of the 3-phase Hybrid be found?

All certificates can be found on Sungrow's website:

https://en.sungrowpower.com/downloads for English

https://ger.sungrowpower.com/downloads for German



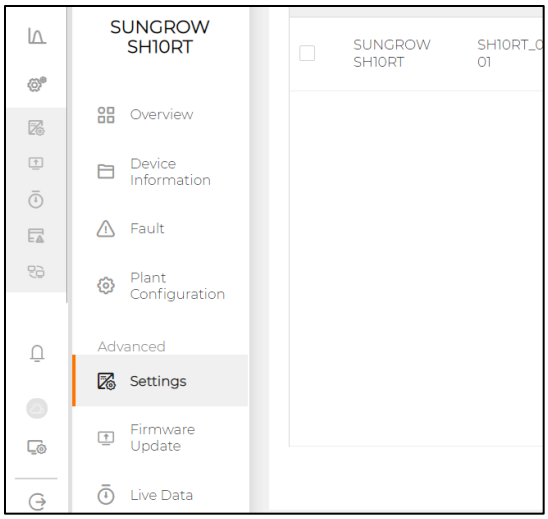


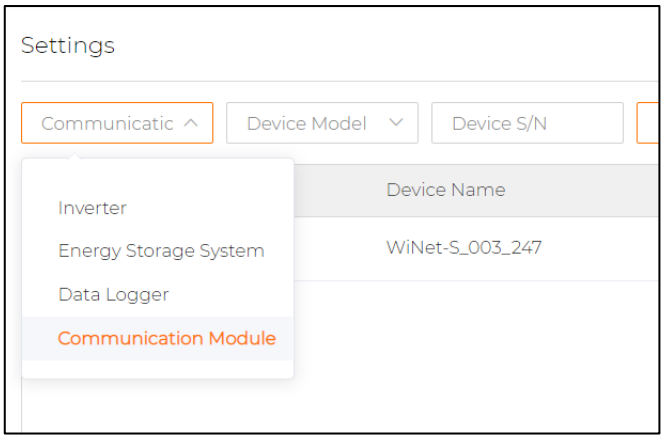
How can the WiNet be setup to activate Live data permanently?

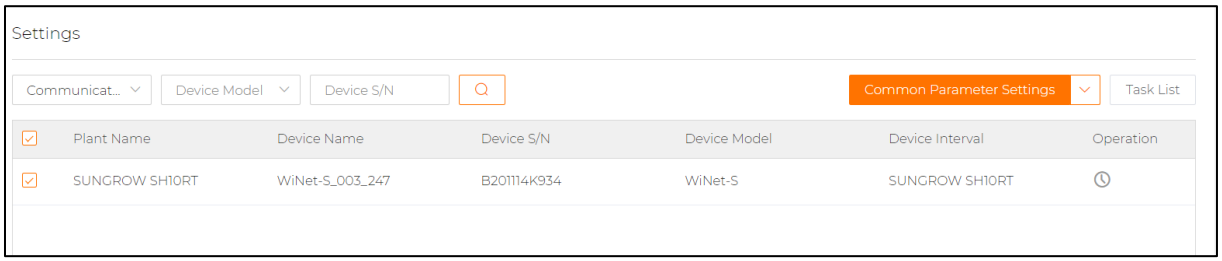
In order to activate Live data permanently, select the plant equipped with 3-phase Hybrid and WiNet module on iSolarCloud.

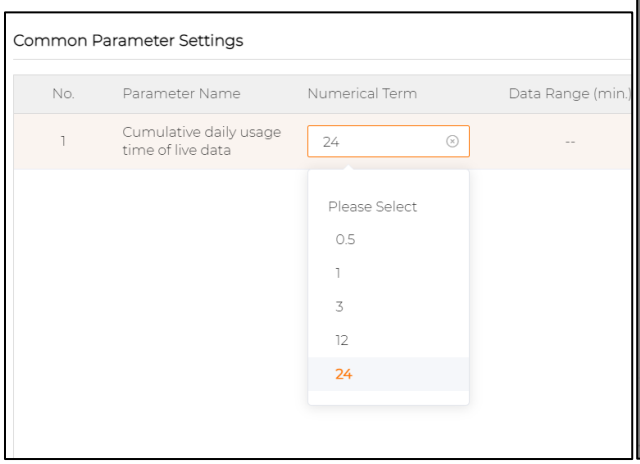
On the Web browser version, go to Settings, then select Communication Module. Tick the box close to the selected WiNet and then click Common Parameter Settings.

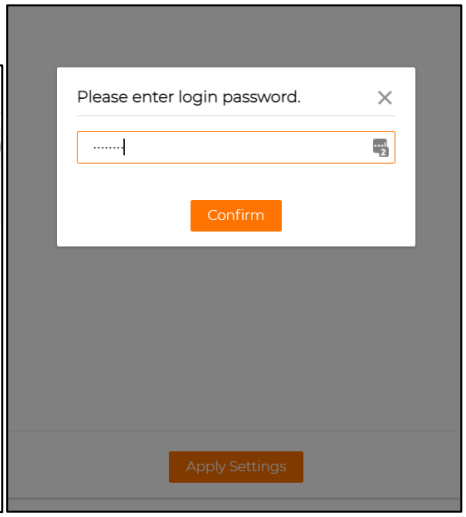
In the category called “Cumulative daily usage of live data” select 24. Click apply settings and confirm with your password.





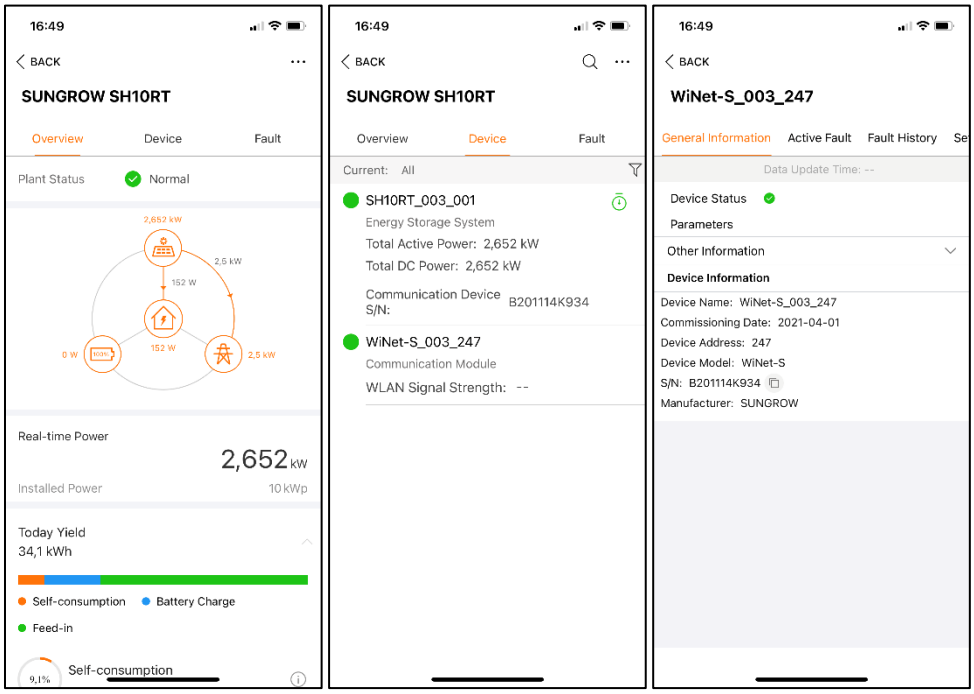


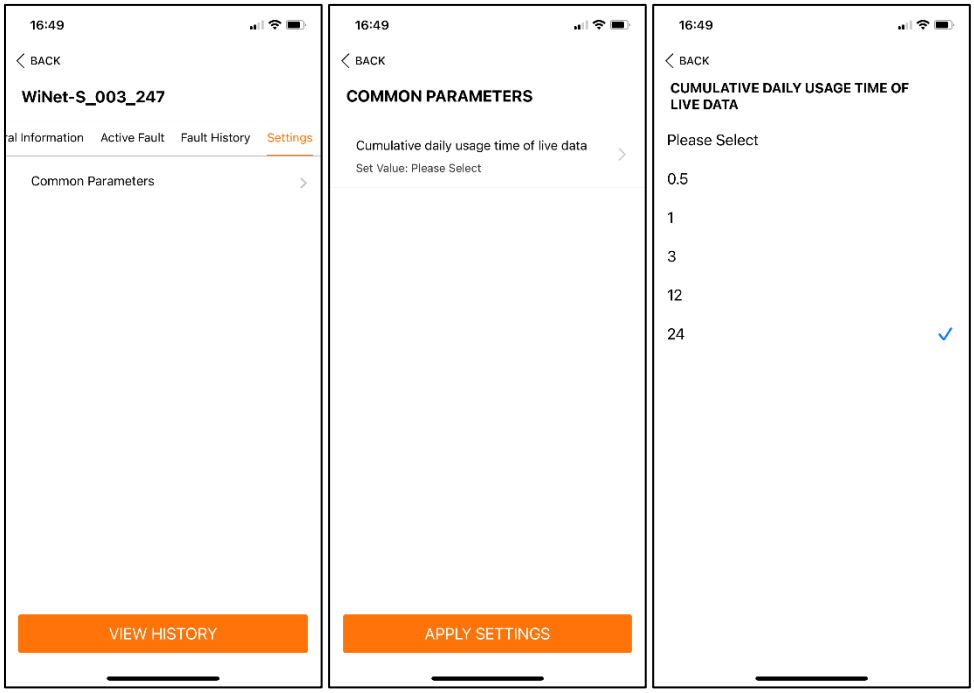




On the iSolarCloud app first select the plant containing the Sungrow 3-phase Hybrid and WiNet module, then go to Device tab and select the WiNet module. Scroll to the right and select the last tab “Settings”.

Select Common Parameters and select 24 in the Cumulative Daily Usage time of Live Data. Select Apply Settings and confirm.





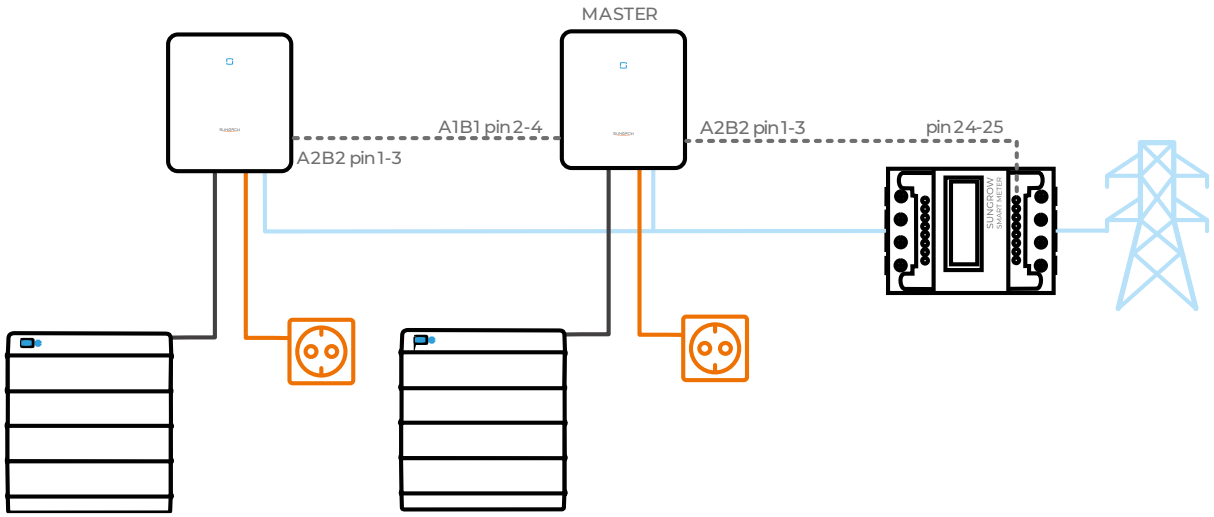
How can two 3-phase Hybrid be connected in parallel?

The new Parallel Mode allows to connect up to 5 Hybrid inverters of the same model in daisy chain RS485. Like this the plant is scalable up to 50kW.

In Germany up to two 3-phase Hybrid (of the same model) can be connected without adding a ripple control receiver.

The parallel connection allows multiple hybrid inverters to share the same meter information for a faster and more accurate self-consumption algorithm.

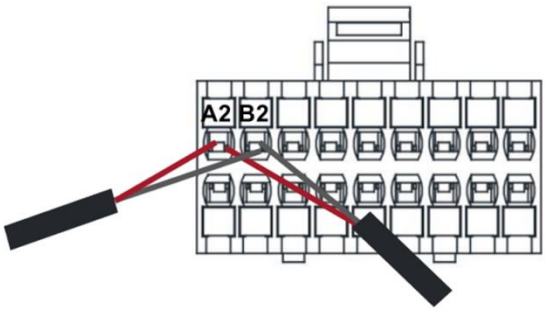
Here you find a Single Line Diagram for Germany as an example to connect the hybrids in Parallel Mode. Only one meter is needed.



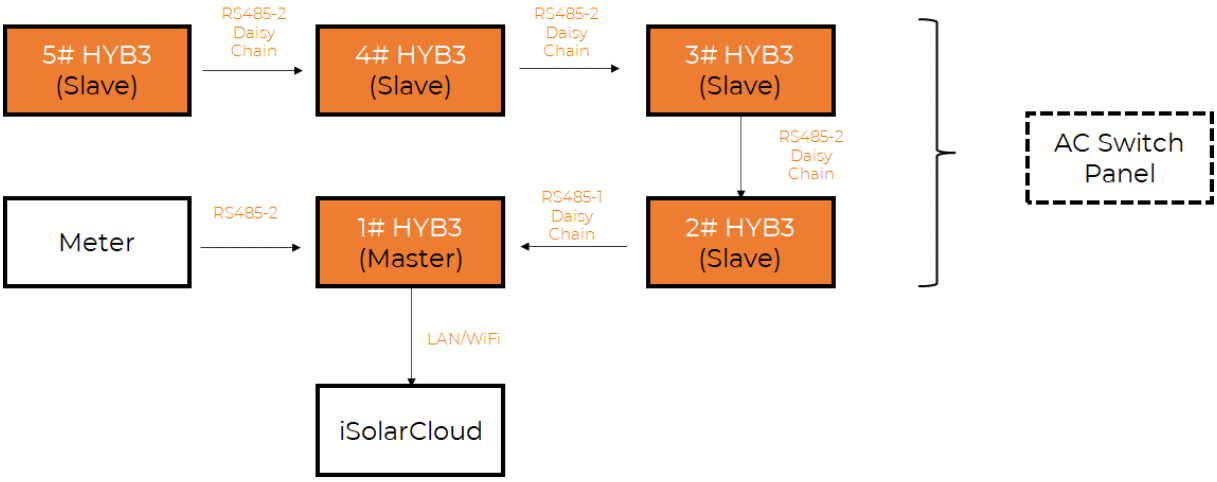
Make sure the hybrids are of the same model: two SH10RT or two SH8.0RT for example.

The Master inverter cannot be installed with LG CHEM battery.

To connect more than one inverter to the Master (not possible in Germany) then a daisy chain needs to be done on port A2B2 (pin 1-3) on each slave.



The following is the schematic for the daisy chain.



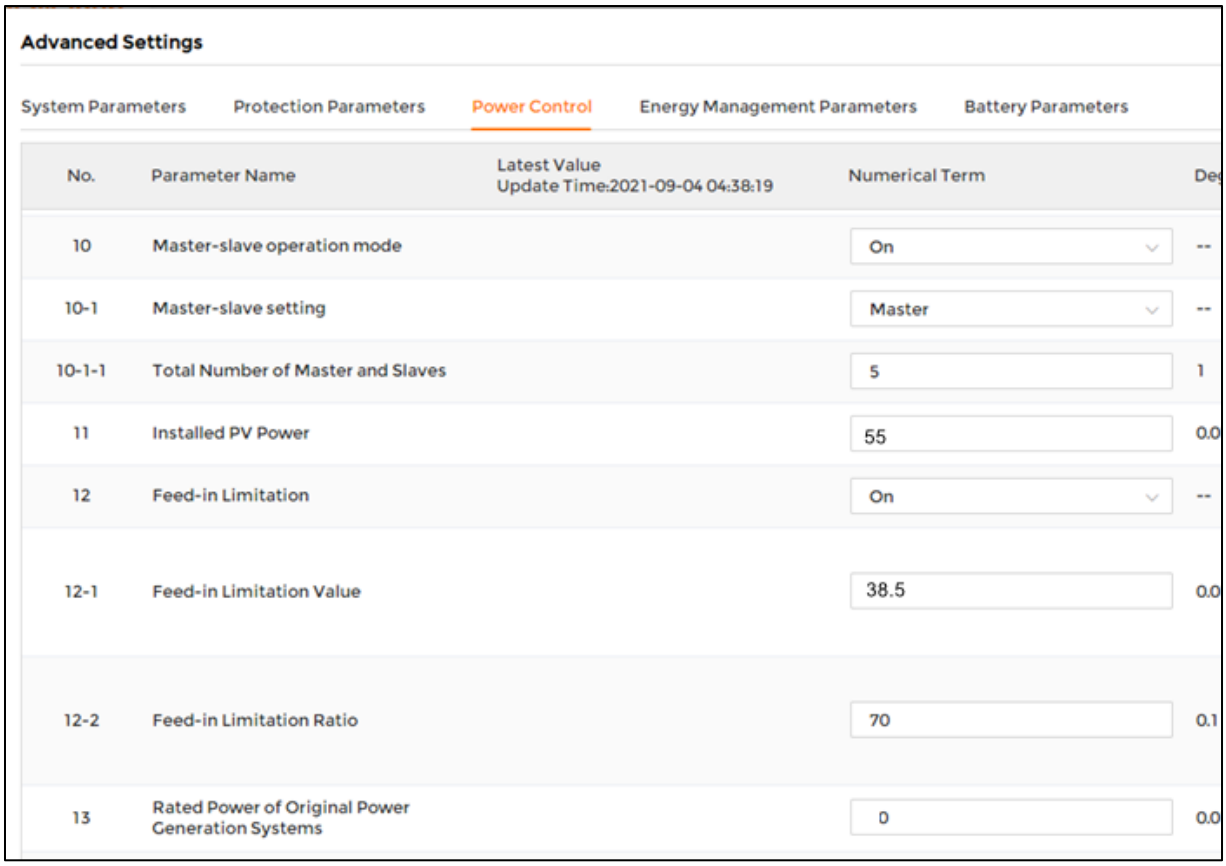
Note that if the parallel mode is used, then the retrofit mode should not be used. So, if 2 hybrids are installed in parallel, the system should not contain another PV inverter (from Sungrow or any other brand).

If a RS485 Modbus monitoring system is used, note that once the parallel mode setting is activated, the slave RS485 address will be changed by the master inverter to the corresponding slave number.

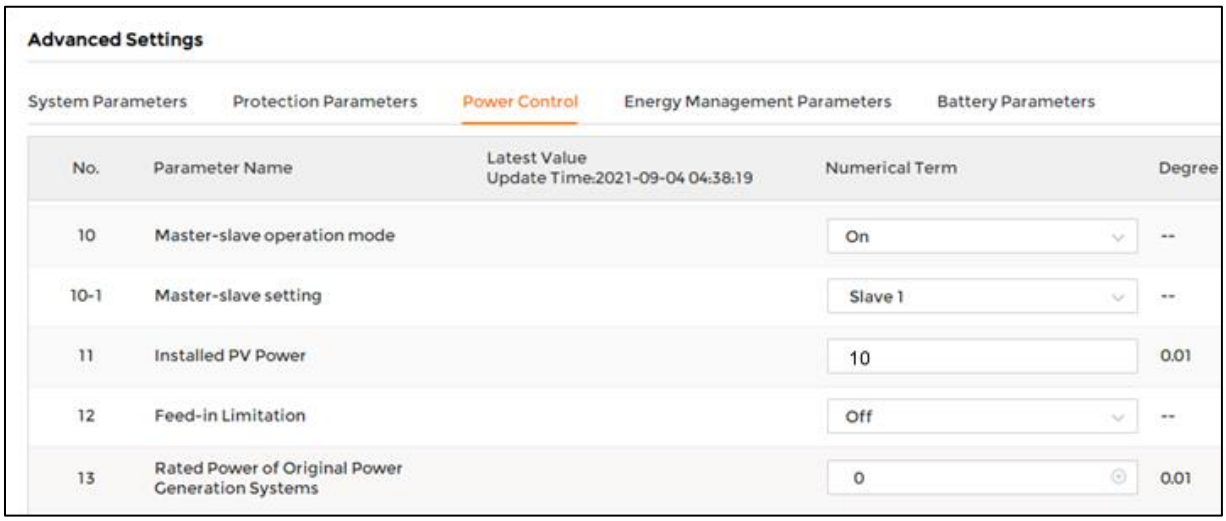
You can setup Parallel mode in the Advanced Settings according to the following table. This is an example for 5 hybrids in parallel.

	Master	**Slave1**	**Slave2**	**Slave3**	**Slave4**
1. Master-slave operation mode	On				
1.1 Master-slave setting	Master	Slave1	Slave2	Slave3	Slave4
1.2Total Number of Master and Slaves	5	-	-	-	-
2. Installed PV Power	Entire Plant installed PV Power (kWp)	Keep default	Keep default	Keep default	Keep default
3. Feed-in Limitation	On	Off	Off	Off	Off
3.1 Feed-in Limitation Value	Entire Plant Feed-in power (kW) (be equal to 'Feed-in Limitation Ratio')	-	-	-	-
3.2 Feed-in Limitation Ratio	Feed-in % of Installed PV Power (%) (be equal to 'Feed-in Limitation Value')	-	-	-	-
4. Rated Power of Original Power Generation Systems	0				

The following settings must be setup on iSolarCloud for the master and slave device. In this example setting a 70% feed-in limitation means the master has Installed PV power of all the inverters in the plant.



The slave devices are set with installed PV power as their own installed power in kWp and the Feed-in Limitation off.

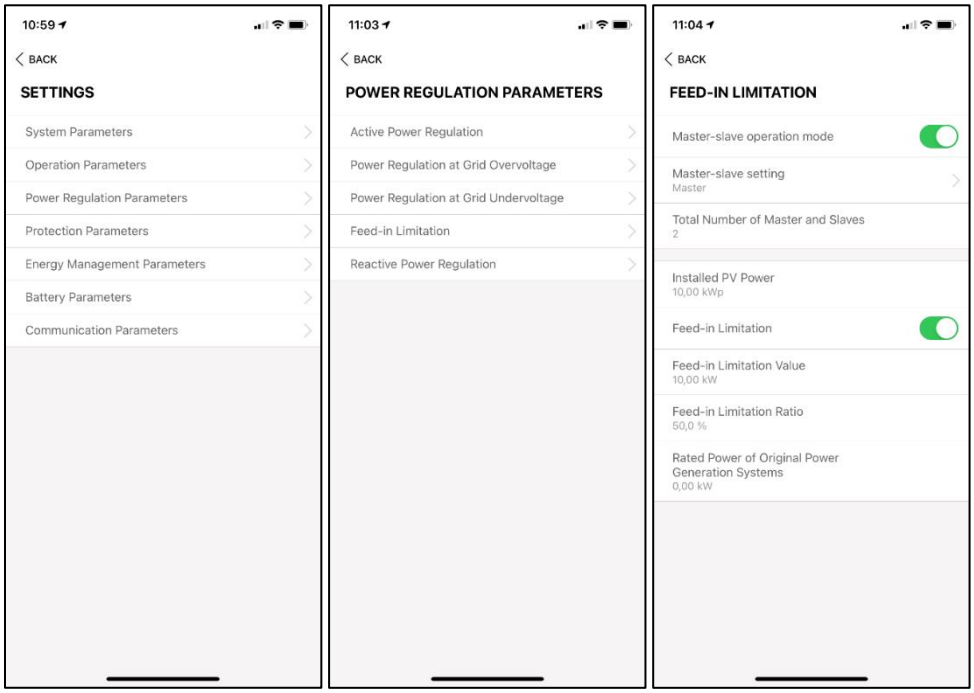


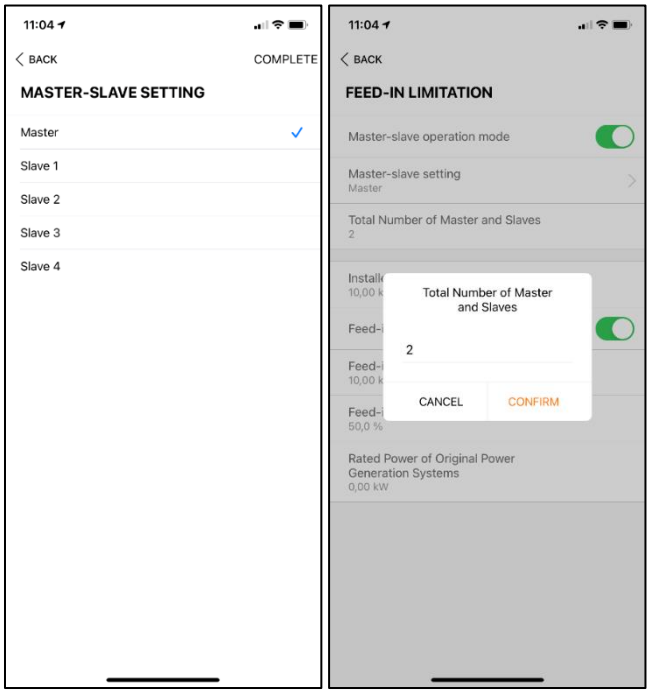
To make the same settings on site using the app, the Local Access Mode needs to be used. First connect the phone to the hotspot of the communication adapter. If it is a WiNet, make sure to press the button on the front 3 times to activate the hotspot Local Access Mode.

If it is the Wifi adapter, then when connecting to the hotspot you might be requested a password which is the Serial Number printed on the side of the Wifi adapter module.

Once logged in in Local Access Mode, go to Settings and Power Regulation Parameters and then select Feed-In Limitation. Then turn on Master slave operation mode.

For the master inverter, also set the number of slave inverter that are connected to it in daisy chain.





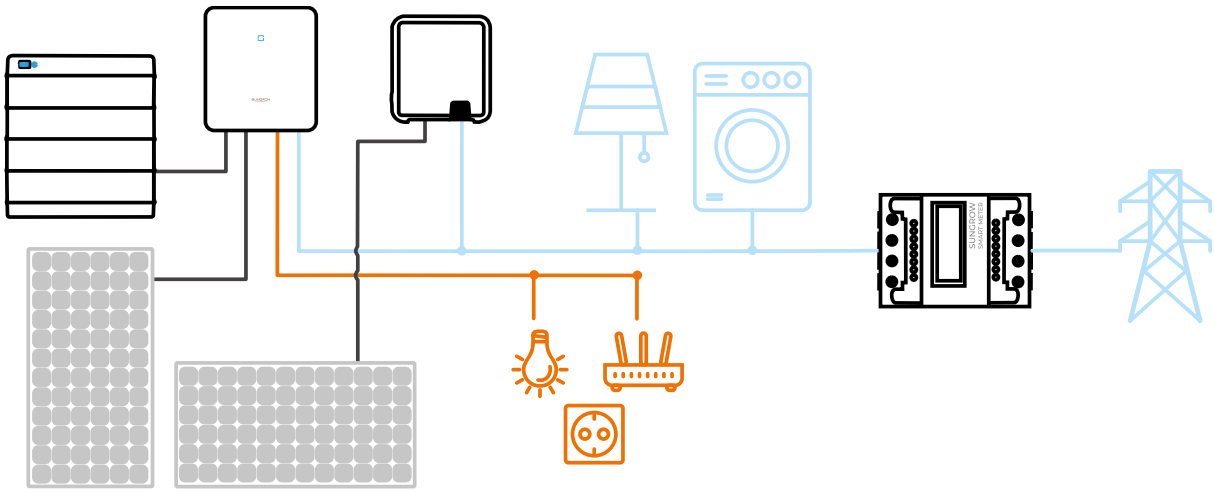
For the slave inverter just select each inverter as the appropriate slave number in the RS485 chain.

How can the 3-phase Hybrid be connected to an existing PV inverter?

The 3-phase Hybrid can be installed in a system that contains an existing PV inverter. It will be able to charge the battery with the energy supplied by the existing inverter.

Please note that this only works for 1pcs hybrid inverter, and not for multiple inverters in parallel.

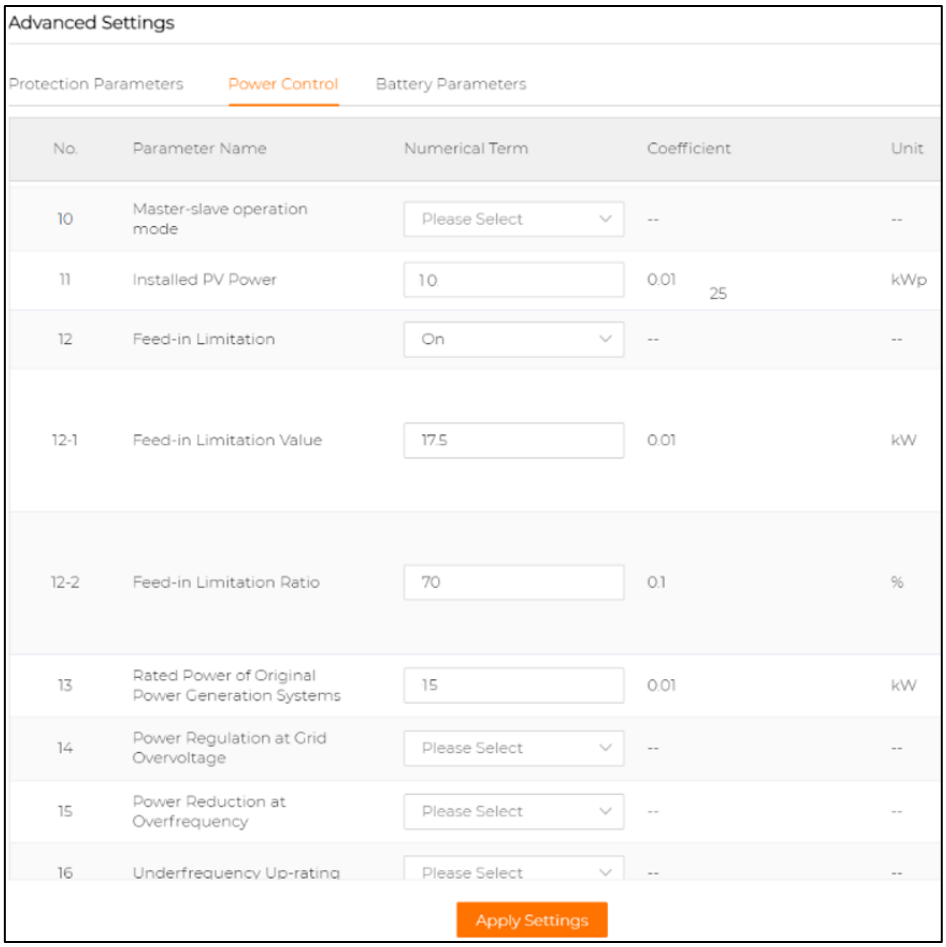
Here below you can find the single line diagram for the connection of the hybrid in Retrofit Mode. It works with any other PV inverter(s) brand or model, and only needs one energy meter.



Here below you can see how to set the parameters of the hybrid in the Advanced Settings.

1. Input hybrid connected PV power rather than whole plant installed PV power in “Installed PV Power” (option 11).
2. Enable “Feed-in Limitation” (option 12).
3. Input whole plant “Feed-in Limitation Value” (option 12-1).
4. Input whole plant “Feed-in Limitation Ratio” (option 12-2).
5. Input existing PV inverter(s) power in “Rated Power of Original Power Generation Systems” (option 13).

Please note that the whole plant “Feed-in Limitation Value” (option 12-1) cannot be less than “Rated Power of Original Power Generation Systems” (option 13). If this should be the case, the existing PV inverter(s) system should be set to static feed-in limitation whose value is equal to whole plant “Feed-in Limitation Value” (option 12-1).

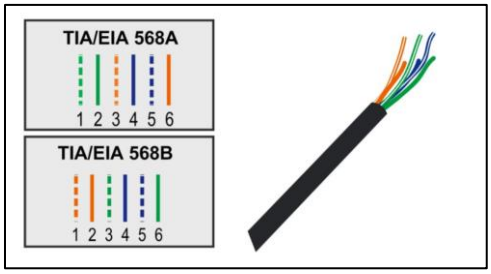


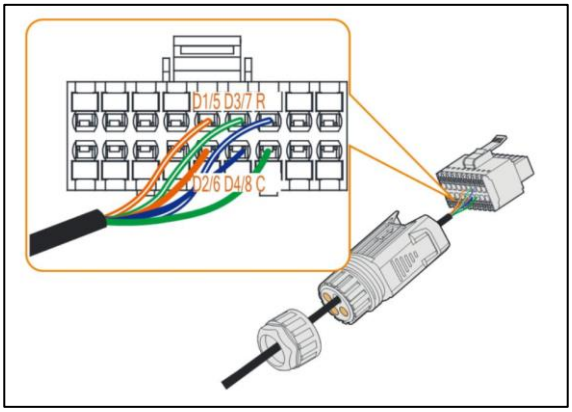
*Sungrow is not liable for the feed-in limitation response time of the whole installation including the existing PV inverter.

How can the Ripple Control Receiver be connected to the 3-phase Hybrid in parallel or retrofit mode?

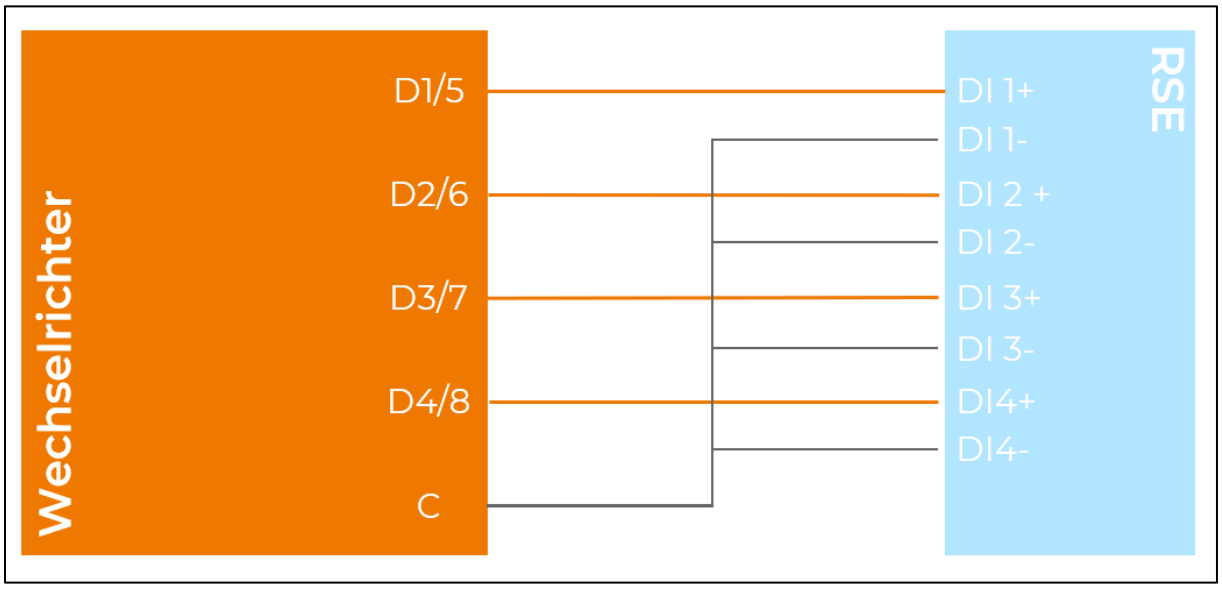
In Germany, the Ripple Control Receiver can be installed to the 3-phase Hybrid in retrofit mode and parallel mode.

Here is how to connect the Ripple Control Receiver signal to the hybrid using a CAT5 cable.

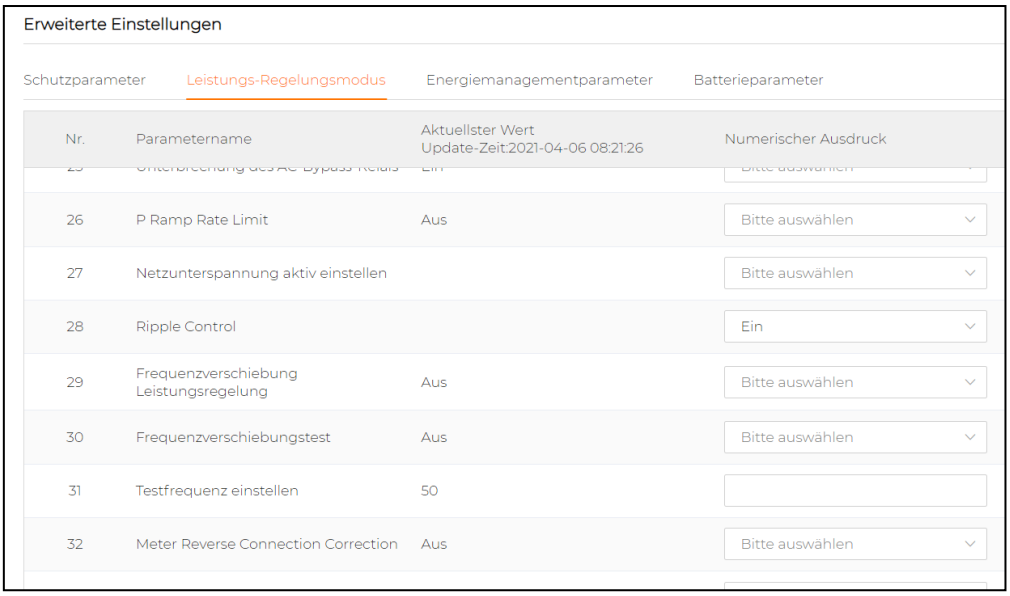




In particular here is how the cable is wired to the communication connector of the hybrid.

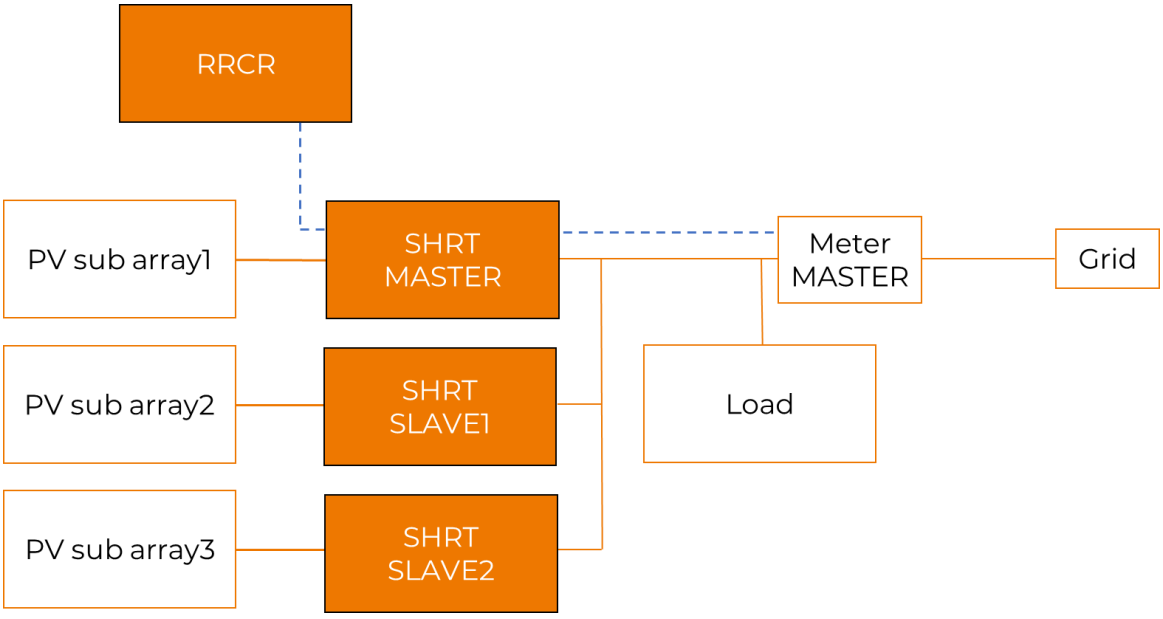


Make sure to turn on the Ripple Control receiver settings in the advanced parameters on the web portal of the 3-phase Hybrid.

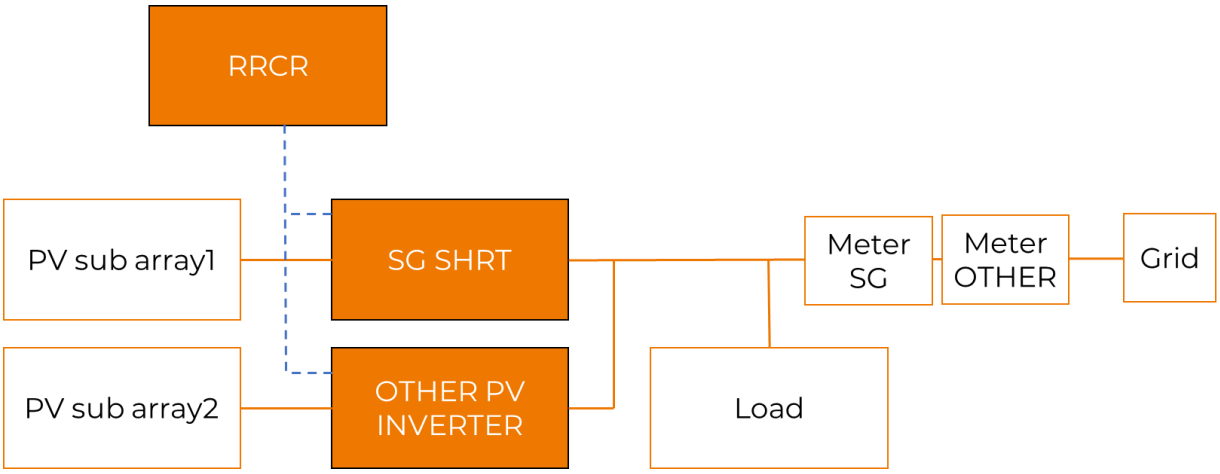


With the ripple control receiver, multiple 3-phase Hybrid can be connected in parallel (up to 5). Please note that Ripple Control Receiver and NA-Protection use the same pin in the communication connector on the hybrid, so NA-Protection will have to be provided separately with external centralized NS Protectionsolution whenever needed.

The Ripple Control Receiver must be connected only to the Master inverter and not to the Slave inverter.



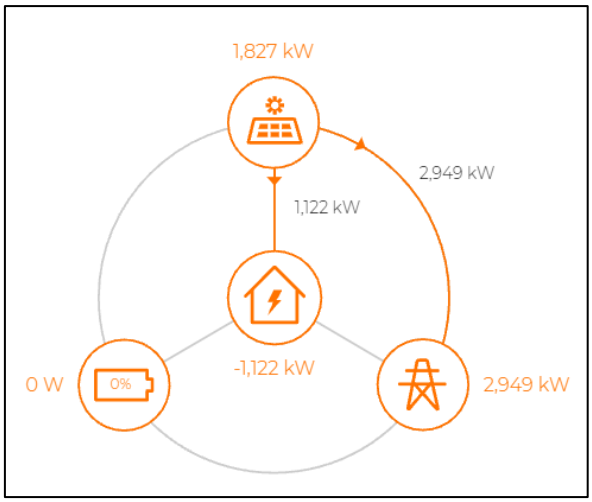
With Ripple Control Receiver it is possible to connect the 3-phase Hybrid with any other PV inverter in parallel. The signal wire, however, must be split in order to connect with both inverters (blue dotted line in the schematic below)



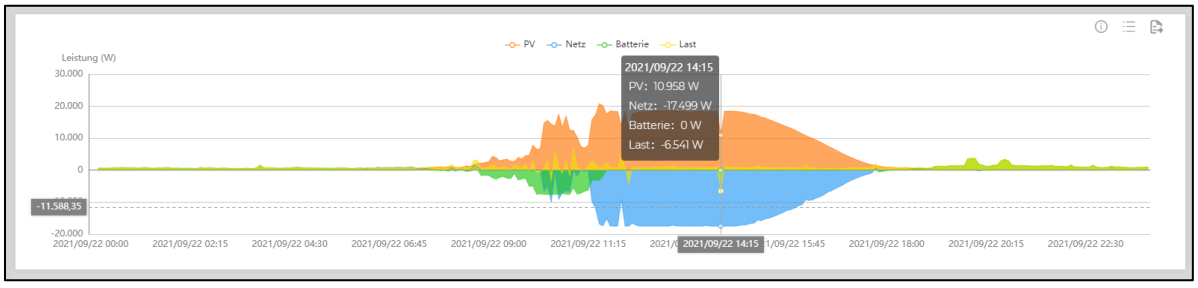
When a signal for power reduction will come from the Ripple Control Receiver, both the 3-phase Hybrid and the other PV inverter will reduce the power by the amount required. So, for example if there is a requirement for 60% power, both inverters will reduce their feed-in power to 60% of the nominal power.

Why does the house load appear negative at times on iSolarCloud when a 3-phase Hybrid is installed in a system with another PV inverter?

The 3-phase Hybrid can be installed in the same plant as an existing PV inverter (from another brand or from Sungrow). However, there is no direct communication between the Energy Management System of the 3-phase Hybrid and the PV inverter. The Sungrow Smart Meter will always detect the injected or purchased energy at the grid connection point. When the other PV inverter injects power in the grid, the 3-phase Hybrid will find that the injected power is more than the power it generates. Therefore the 3-phase Hybrid calculates that exceeded injected power comes from the PV inverter. So, the exceed power will be illustrated in negative values from home loads. The 3-phase Hybrid will use this energy to charge the battery as expected.



If the PV inverter is from Sungrow, like the KTL or SGRT series, and both inverters are in the same plant on iSolarCloud, then both the PV inverter and hybrid will update their production information to iSolarCloud. However, since the two devices update the information independently from each other, there could be a delay in the information update, resulting in an erroneous calculation of the house load in that moment. As the hybrid relies on the Smart Meter for load calculation, it could be that the sum of the production and consumption in that moment results in a negative load shown. Depending on the nature of the update delay, this could happen in a temporary way and be resolved swiftly in the next update iteration.



Why does the energy flow diagram on iSolarCloud shows confusing or incorrect status temporarily?

The 3-phase Hybrid has a built-in Energy Management System that communicates with the Sungrow Smart meter to control the PV production and battery charge and discharge multiple times every minute. However, the house load consumption as well as the PV production situation changes continuously over time. Sometimes when the load changes or the PV production increases or decreases suddenly, the 3-phase Hybrid control system will take a few seconds to adapt to the new state.

However, when using the integrated iENet port or the WiFi adapter, the Energy Flow Diagram in iSolarCloud is updated every 5 minutes. This means that iSolarCloud takes a snapshot of the situation every 5 minutes only without considering the temporary state of the inverter.

This could result in some confusing or incorrect behavior shown on the iSolarCloud Energy Flow Diagram:

- The Energy Flow shows the battery discharging to the grid
- The Energy Flow shows the PV injecting energy to the grid while the battery is not fully charged
- The Energy Flow shows PV charging the battery while the grid supplies the load

All of these behaviors are shown to be only temporary and due to the fact that the load and PV production is constantly changing and iSolarCloud is making screenshots of the situation during these transition periods.

The EMS is working properly in these situations and adapting to the changes; however, the swift reaction of the EMS is not reflected in the iSolarCloud visualization due to the 5 minutes refresh time. 5 minutes later the situation shown will be different and already adapted to the change in conditions.

The best way to solve this visualization inconvenience is to install a WiNet adapter instead of the WiFi adapter or the iENet port. The WiNet provides Live Data feature with the possibility of seeing the Energy Flow Diagram updated every 10 seconds. This way, the customer will be able to experience the EMS reacting to every change in the production and consumption conditions.