

Ripple Control Function



What is Ripple Control

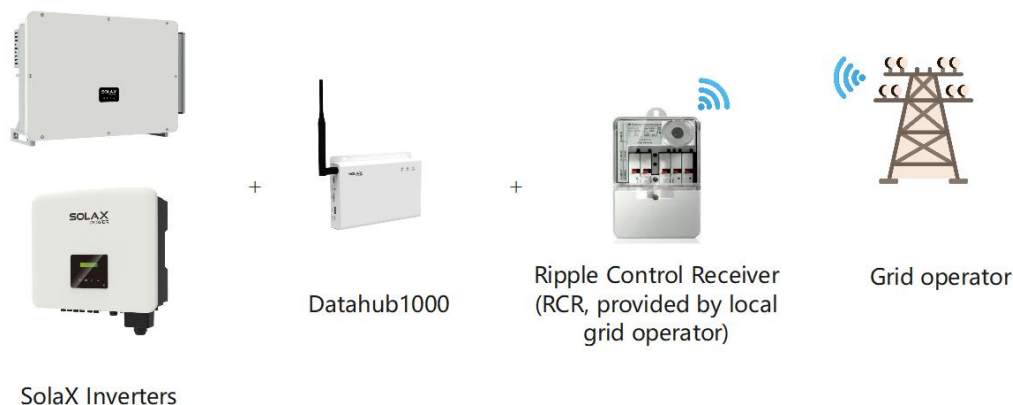
Ripple Control is a common form of grid management in many countries around the world. Its communication is based on superimposing a very high frequency signal onto the 50/60Hz mains power. The amplitude of the superimposed signal is usually around 5% of the nominal phase voltage, and the frequency of the ripple signal is usually ranging from 100 to 1600Hz. For instance, in France the frequency used by grid ripple control systems is 175 Hz. In Germany, the Renewable Energy Sources Act has particular requirement for PV installations to be remotely controlled to reduce output power in the event of grid overloading. It will usually have a ripple control receiving device installed on site to receive this control signal from the grid operator. In this way, the local grid system operator can send control signals remotely in order to limit the output of the solar PV systems.

SolaX provides 16 controllable options with 4 Digital Inputs in response to different grid dispatching requirements from the grid operator. The installers can easily set 16 different combinations of the active power and reactive power values in percentage.

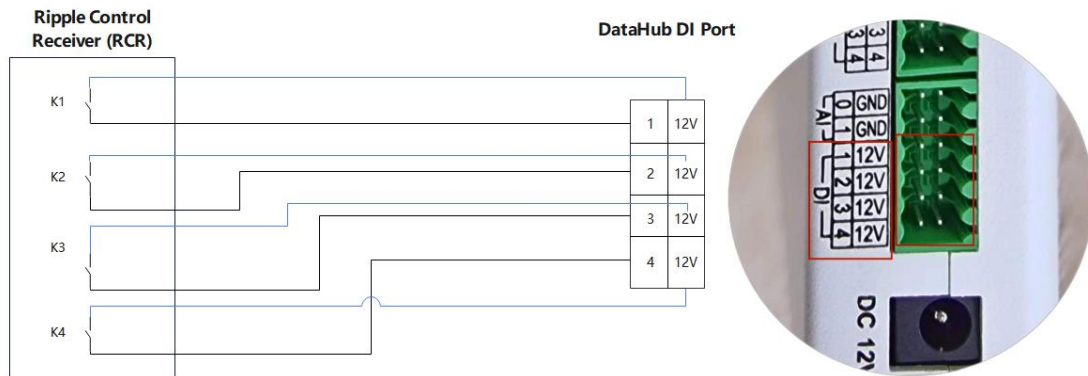
How to connect DataHub to Ripple Control Receiver

Compatible inverters

| Inverter Type | Inverter Series | Power Section |
|-----------------|-----------------|---------------|
| String Inverter | X3-MIC G2 | 4.0-15kW |
| String Inverter | X3-PRO G2 | 8.0-30kW |
| String Inverter | X3-Mega G2 | 40-60kW |
| String Inverter | X3-FORTH | 80-150kW |
| Hybrid Inverter | X3-Hybrid G4 | 5.0-15kW |



Connection Diagram



| Port | Silk | Description |
|------|------|-----------------------------|
| DI 1 | 1 | Input Signal from K1 of RCR |
| | 12V | |
| DI 2 | 2 | Input Signal from K2 of RCR |
| | 12V | |
| DI 3 | 3 | Input Signal from K3 of RCR |
| | 12V | |
| DI 4 | 4 | Input Signal from K4 of RCR |
| | 12V | |

How to set up the power control functions

After connecting a laptop to the WiFi hotspot of DataHub, please login to the configuration page via <http://192.168.10.10> on browser. For more details please refer to the DataHub user manual.

① On the Display **D1, D2, D3, D4** of DI port, **green** dot means corresponding K1-K4 of RCR is closed.



② On the **Enable** session, enable the DI option to activate the power control settings;

| D1 D2 D3 D4 | Enable |
|---|-------------------------------------|
| <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="checkbox"/> |
| <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> | <input checked="" type="checkbox"/> |
| <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> | <input checked="" type="checkbox"/> |
| <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> | <input type="checkbox"/> |
| <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="checkbox"/> |

- ③ On the combobox of **Setting**, select the following power control functions:
- Inverter output active power control
 - Inverter input active power control
 - Inverter output reactive power control
 - Remote shutdown

| D1 D2 D3 D4 | Enable | Setting | Active Power%(0~100) |
|---|-------------------------------------|--|----------------------|
| <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="checkbox"/> | Please Select | 0~100 |
| <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> | <input checked="" type="checkbox"/> | Please Select | 0~100 |
| <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> | <input checked="" type="checkbox"/> | Inverter output active power control | 0~100 |
| <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> | <input type="checkbox"/> | Inverter input active power control | 0~100 |
| <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="checkbox"/> | Inverter output reactive power control | 0~100 |
| <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> | <input type="checkbox"/> | Remote shutdown | 0~100 |
| <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="checkbox"/> | Please Select | 0~100 |
| <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> | <input type="checkbox"/> | Please Select | 0~100 |

- ④ When **Inverter output active power control** is selected, input the active power value you need to set in percentage([0-100]%), and for **Inverter output reactive power control**, please input the Power Factor([80-100]%) and reactive power mode respectively. The reactive power mode includes **OverExcited** and **UnderExcited**;

| Active Power%(0~100) | Power Factor%(80~100) |
|----------------------|-----------------------|
| 0~100 | 80~100 |
| 50 | 80~100 |
| 0~100 | 80~100 |
| 0~100 | 80~100 |
| 0~100 | 80~100 |

| Active Power%(0~100) | Power Factor%(80~100) | Reactive Mode |
|----------------------|-----------------------|---------------|
| 0~100 | 80~100 | Please Select |
| 0~100 | 90 | Please Select |
| 0~100 | 80~100 | OverExcited |
| 0~100 | 80~100 | UnderExcited |
| 0~100 | 80~100 | Please Select |
| 0~100 | 80~100 | Please Select |
| 0~100 | 80~100 | Please Select |
| 0~100 | 80~100 | Please Select |

⑤ Submit and save the settings.

Note:

- Make sure to follow STEP1-5 strictly. In total there are 16 different combinations available for settings.
- **Green** dot means that the selected DI port 1-4 will be pulled-up to high level(12V), which matches the scenario that the co-responding K1-K4 on RCR are switched closed after receiving ripple control signal from the local grid operator.
- When the actual input pins of D1-D4 are not configured in the power control interface, the DataHub will control the connected inverters to run full power at normal condition.
- When switching from one DI combination to another one, the selection of the new DI combination will be executed. The old settings will be stopped.