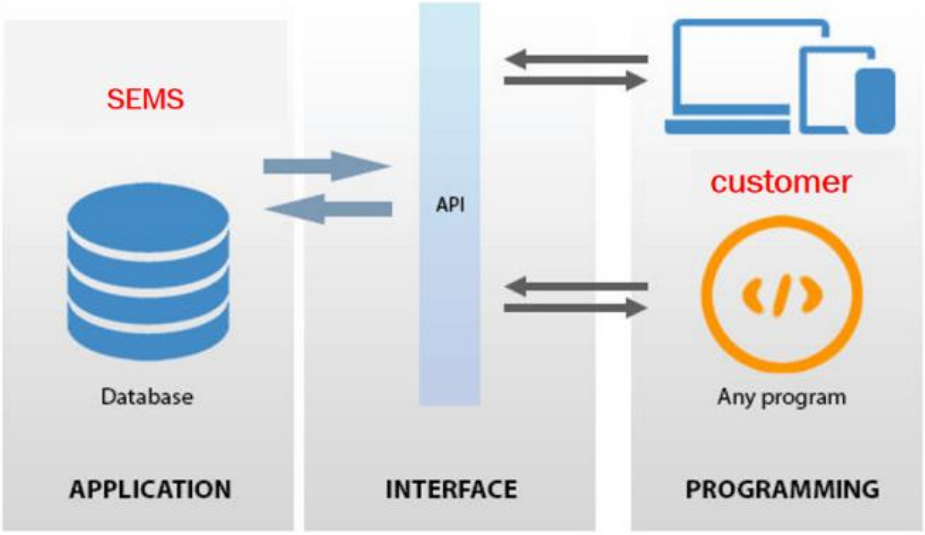
API Introduction

(SA-E-20221031-001)

GoodWe provides a data communication method with our customer or third-party using API. This document introduces the GoodWe API solution.

What is API

API stands for application programming interface, which enables companies to open their application's data and functionality to external third-party developers and business partners. This allows two applications to communicate with each other through a documented interface without having to know how they're implemented.



GoodWe provide API service to build the data communication with our customer or third-party through SEMS platform. Compare to the Data Transmission service that only transfer the raw data based on the available registers of the Modbus RTU protocol of the inverter, API service can call both raw data and business data processed by SEMS.

There are three different types of API available for customers according to different application scenarios or requirements, **open API, real-time data API and batch remote control API.**

Open API

Open API as the common used API type is only open to the SEMS organization account users. With the open API service the users will have access to all the devices under the local organization, and realize the data call and remote control. Open API also supports the call of data logger's data, for example get the weather station data, SEC1000 data and HomeKit data.

Open API uses HTTPS protocol to invoke data and set the control commands. In this Way, GoodWe takes the initiative to send the data to the Http address provided by the client, which is one-to-one and point-to-point.

The 31 interfaces to access to different type of data can be divided into 4 forms, plant interface, device interface, remote control interface and data logger interface. And there is calling frequency limit.

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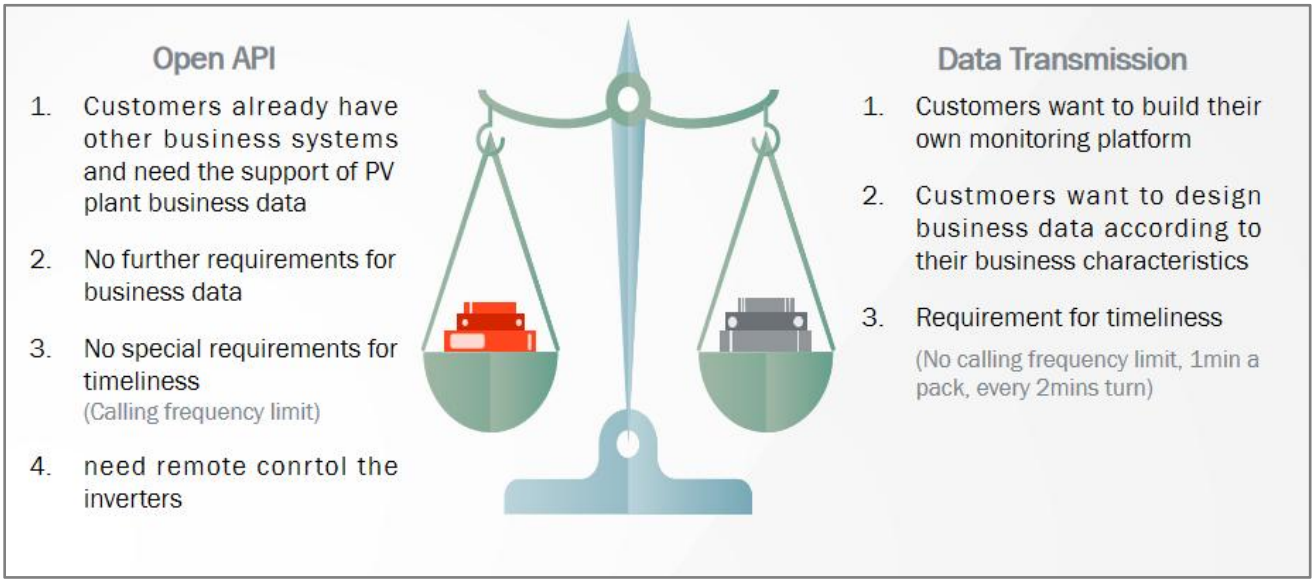
Plant Interface	Device Interface	Remote Control	Data Logger
■ plant list ■ plant data ■ daily power data ■ daily, monthly and annual generation data	■ device list ■ device detail data ■ daily power data ■ daily, monthly and annual generation data	■ RTC, safety code, Back up ■ capacity,charge, discharge ■ PF, reactive power ■ Export power limit ■ Max feed power, EMS	■ Weather station data ■ SEC configuration data ■ SEC1000 data ■ HomeKit data

Users can remotely control the inverters, including set the parameters or the functions, according to the different interfaces of the remote control interface. However, open API doesn't provide the firmware upgrade function. Users who have the Open API service, are also SEMS organization accounts and can apply for an account of GoodWe IOT smart management platform (IOT platform). The organization accounts will have access to the remote firmware upgrade feature.

The comparison of the usage scenarios between Open API and Data Transmission is shown in the picture below.



Real-Time Data API

This type of API using HTTPS protocol is open to the third-party suppliers. The suppliers don't need to create the plants in SEMS platform, they only need to apply for the API access account and create a license agreement, next they need to add the devices into the whitelist and get the authority from the end users. Then the third-party supplier can have access to the authorized devices in the whitelist.

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Through this API method the third-party suppliers can obtain the inverter's real time data. And it support the data calling from multiple inverters at the same time. However, it doesn't support the remote control. The data interfaces can be divided into **7 different types.**

1. Obtain the inverter SN authorized by the end-user	2. Obtain the data of BMS
3. Obtain the data of grid status	4. Obtain the alarm data of inverter
5. Obtain the operation data of inverter	6. Obtain the production data of inverter
7. Obtain the power station info	

Batch Remote Control API

Batch Remote Control API is used to implement the remote control of the inverters for the third-party suppliers. The use conditions are the same as Real-Time Data API. The supplier can only control the authorized inverters in the whitelist. Therefore, this type of API is common used for the dynamic control by the grid company.
For example, Greensync is Australia uses this API for real time remote control of our inverters. In addition, Batch Remote Control can be used with Real-Time Data API to support the application of VPP and Microgrid.
Batch Remote Control API uses Kafka to communicate between third-party and interfaces of our devices' data. In this way, the third-party will publish the control command to a topic, and GoodWe will consume this command by subscribing to the topic and then respond to it. GoodWe will then publish the result to another topic, and the user can consume this control result topic and there are 6 interfaces to classify the topics.

Single Parameter	■ Single parameter control command request topic ■ Single parameter control command request result topic
Query	■ Query request topic ■ Query request result topic
Multi-Parameter	■ Multi-parameter control command request topic ■ Multi-parameter control command request result topic

API service is provided by GoodWe SEMS (Smart Energy Management System) team, anyone who is interested in this service could contact the GoodWe service team.

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