

1 PV Mode

Simulation of PV arrays can be done with PV option. The equipment can be used to simulate IV curves of various solar panels, under various temperature and irradiance condition, and to test the MPPT characteristics according to EN 50530:2010.

1.1 I-V Curve Setting

I-V curves are created by entering simple parametric data. Each curve consists of 1024 data points. Irradiation level or temperature can be modified to test the behavior of a grid tied inverter under realistic conditions for cloud shadowing and panel temperature rise. There are three methods for setting I-V curve, such as PV1, PV2 and Shadow.

For Setting of PV1

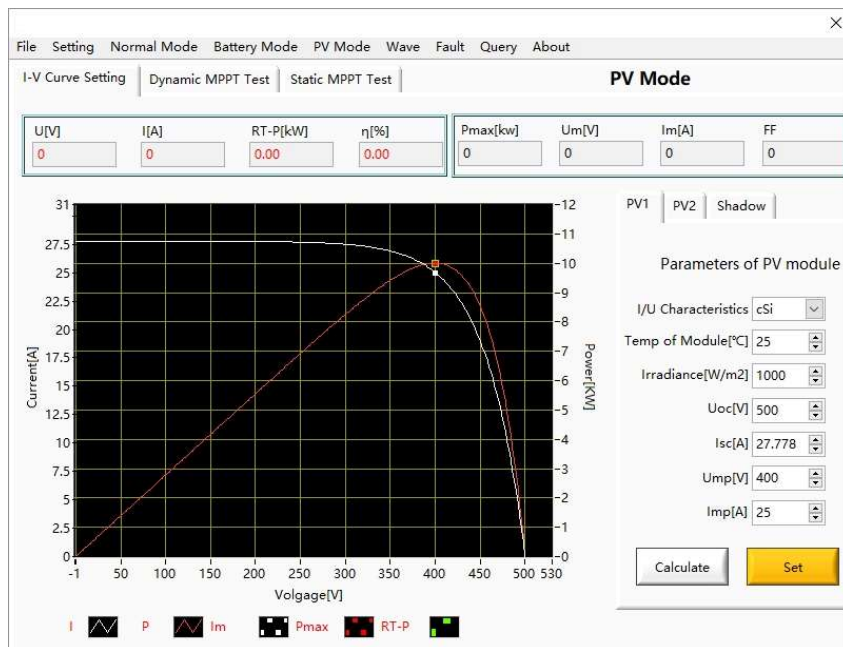


Figure 1 I-V Curve Setting for PV1

While setting, make sure that the parameters of PV array are set, such as I/U Characteristic, temperature of environment, Irradiance, Uoc, Isc, Ump and Imp. Then the I-V curve will be displayed on the Wave display area after the “Calculate” button is pressed.

Notice: Uoc must be greater than Ump, Isc must be greater than Imp.

For Setting of PV2

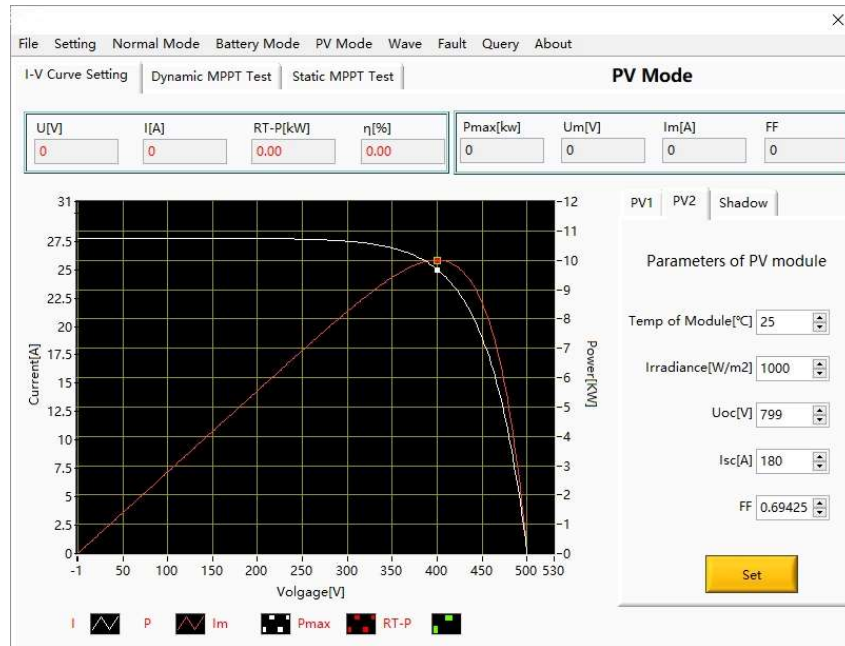


Figure 2 I-V Curve Setting for PV2

In PV2 setting page, the temperature of PV module, Irradiance, Uoc, Isc and FF can be set, and I-V curve will be displayed on the Wave display area after the “Set” button is pressed.

For Setting of Shadow

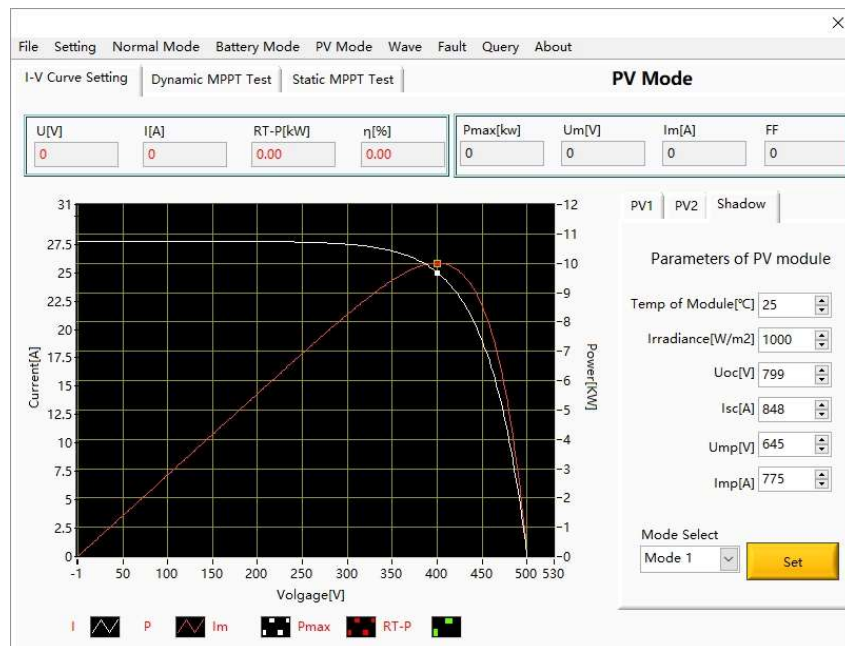


Figure 3 I-V Curve Setting for Shadow

In Shadow setting page, the temperature of PV module, Irradiance, Uoc, Isc, Ump and Imp be set for two modules at most, and I-V curve will be displayed on the Wave display area after the “Set” button is pressed.

1.2 Dynamic MPPT Test

Multiple IV curves can be stored and performed in sequence, and time for each step can be modified

individually.

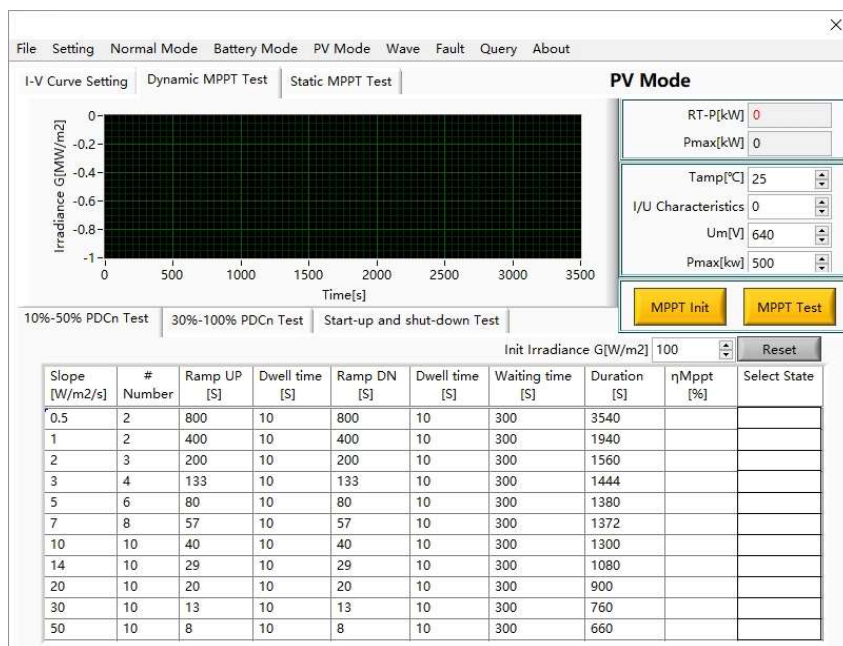


Figure 4 Dynamic MPPT Test Window

The efficiency test of dynamic maximum power point tracking (MPPT) is performed according to illumination = f(time). The irradiation conditions of 1000W/m² at 25 degrees Celsius correspond to 100%.

The MPPT test consists of 3 test procedures, such as 10%-50% PDCn test, 30%-100% PDCn test and SLOW switch machine test.

The default values of test procedures are referenced to EN 50530:2010. However, user can modify the value according to the actual test requirements.

1.3 Static MPPT Test

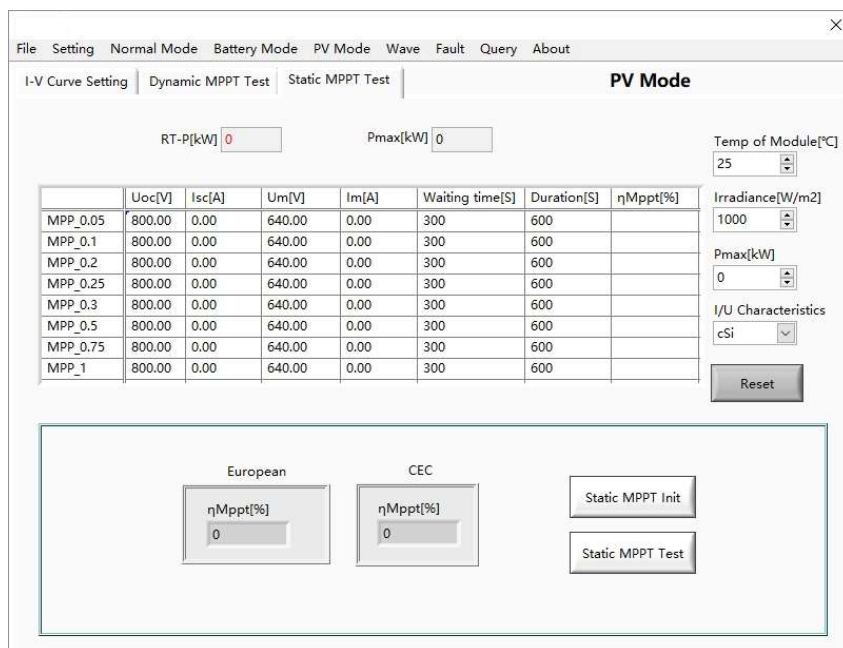


Figure 5 Static MPPT Test Window

According to EN 50530:2010, the measurement of the static MPPT efficiency must be performed with test specifications as defined in Table 1 in the third section of fourth chapter. These parameters can be set to the actual values required.