

Technical guide

Inverter matching with high current solar module

As current is increasing with higher power modules, one may have the question that whether there is a safety concern or power losses due to current limitation. This document is a technical guide for matching Jinko solar products with string inverters in aspect of DC current. Using a typical inverter samples as below

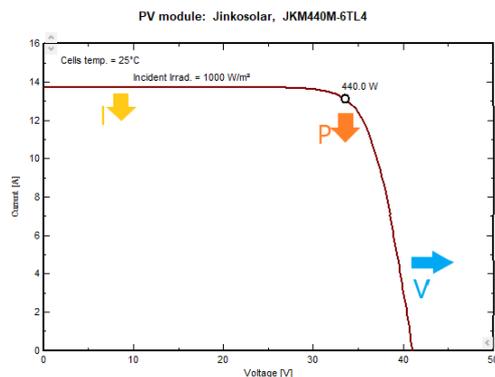
| Tiger pro 60 cell 440W | | 5kW Inverter | |
|-----------------------------|---------|---|--------|
| Short circuit current (Isc) | 13.73 A | Max. short-circuit current (Isc) | 15 A |
| Max. power current (Imp) | 13.05 A | Max. input current per MPPT tracker (Imp) | 12.5 A |

1. Matching Maximum short circuit current.

Designer should ensure that the Isc of the subarray stays below the MPPT short circuit limit. Thus in above case the maximum parallel string per MPPT is one. However, add a safety factor e.g. 10% when matching modules Isc with inverter is not required by AS standards, where inverter manufacturer's guide to be followed.

2. Matching Max power input current.

MPPT operating current limit reflects the maximum capability of the MPPT, thus in theory power loss due to input current limitation could happen when input current exceeds 12.5A, in above example. **However, the impact of current clipping is negligible as the power clipping occurs simultaneously.** In a typical MPPT operation mechanism of power clipping, voltage is increased thus current will decrease along the IV curve, thus the overall input power, as indicated in diagram below.



Power clipping happens very often during middays, and always occurs before current clipping, research shows DC losses due to current clipping is less than 0.01% when the DC/AC ratio is higher than 1.25. **Therefore, there is no yield loss due to current clipping when the DC/AC ratio is larger than 1.25 in Australia.** Where a slightly higher operating current has a positive effect generating additional yield when the system is not at its peak.

Kind regards,

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