

## WHITEPAPER

## SMA CORE1: OPTIMISED FOR ANY BUSINESS

A new and better choice for commercial PV systems



SMA commercial solar systems are designed to deliver unmatched energy generation for any business while being able to provide the highest levels of reliability and safety.

At the centre of the system is the SMA CORE1 inverter, which was designed specifically for commercial sites with complex roofs and partial shading.

Find out why the SMA CORE1 is the ideal inverter for the PV designer, installer and end-user:

## SIMPLICITY AND FLEXIBILITY

The CORE1 inverter was specifically designed for complex roofs and partially shaded PV arrays, giving system designers, installers and end-users flexibility and simplicity to generate the maximum amount of solar energy for the lowest cost.

Thanks to its freestanding design, the inverter can be installed directly on the roof next to the solar array without the need for special mounting arrangements.

Alternatively, the CORE1 can still be wall mounted using the Universal Mounting Kit available from SMA.



It also allows system designers to more easily design a PV system without needing extensive and time-consuming site visits.

Thanks to the inverter's 6 Maximum Power Point Trackers (MPPT), it easily allows for multiple PV array orientations while SMA's patented ShadeFix negates the effects of partial shade without adding any components.

# MAXIMUM ENERGY & PERFORMANCE

PV systems with CORE1 inverters have one of the highest operating efficiencies of any inverter on the market. Efficiency directly determines how much energy you will generate (and therefore how much money you'll save).

Since the CORE1 inverter is designed for complex roofs with partial shading, this high efficiency means that, compared to other solutions which need to install DC-DC optimisers on the PV module, you can generate significantly more energy each year. For example, a typical 250kW commercial PV system in Australia using CORE1 inverters is more than a full percentage point higher in efficiency compared to a competitor system using DC-DC optimisers.

In turn, this means the CORE1 system generates over 5100kWh of energy each year. That's more energy than a typical Australian home uses in an entire year, just due to a higher efficiency!



	CORE1	Competitor
Inverter Efficiency	97.8%	98.0%
DC-DC Converter Efficiency	N/A	98.6%
System Efficiency	97.8% (97.8% x 1)	96.6% (98.0% x 98.6%)

The unmatched performance doesn't stop there. SMA's patented OptiCool technology means the CORE1 inverter outperforms the competition when the sun is shining bright and hot.

In commercial PV systems, temperatures on the roof during summer regularly exceed 50°C. So it is no good if as soon as the sun starts shining and the temperature gets high, your solar system's output starts to drop. For a 50°C temperature, a CORE1 inverter will be producing 15% more energy than the competition. At increasingly more common extreme rooftop temperatures of 55°C, a CORE1 inverter can be producing as much as 50% more energy.

That is extra energy you don't need to do anything to capture, other than making sure your commercial PV system is built on the back of the SMA CORE1 inverter.



## MAXIMUM OVERSIZING

Today, PV modules are one of the lowest cost reliable energy generation technologies. When it comes to your commercial PV system, adding more PV modules can be quite economic.

For example if the size of a PV array is increased by 15%, it will only increase the total cost of a system by less than 5%.

Most inverters on the market can only be oversized by approximately 130%. But the CORE1 can be oversized by up to 150%. This would mean that on a typical commercial solar system, you can install 15% more PV modules without needing to add more inverters.

On a 250kW PV system, this would result in an extra 40,000kWh being generated each year. More energy from less inverters, no you can't argue with that!



Inverter AC power output with 150% DC:AC oversizing and from a competitor inverter with 135% DC:AC oversizing.

## MAXIMUM OVERSIZING

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#### MAXIMUM SAFETY

The CORE1 inverter is designed for maximum safety and has multiple design and integrated features to ensure both a solar system and the site it is installed at has maximum possible safety.

The built-in DC switch reduces the number of external components which needs to be installed, while the design allowing the inverter to be installed directly on the roof means all DC cabling and infrastructure stays outside the building's envelope. Sunclix DC connectors provide reliable and safe connection to the inverter, while the 6 MPPTs with 12 string inputs negates the need for troublesome string fusing which are common failure points, and would otherwise add cost and complexity.

Surge Protection for AC and DC sides are able to be integrated directly into the inverter to protect from damaging lightning.

It is often said that "**Less is More**". With CORE1, less complexity and fewer installed components, and advanced systems means that not just more, but maximum safety is achieved for commercial PV systems.

### **RELIABILITY & TRUST**

SMA have been making solar inverters longer than any other manufacturers, with more than 2.5GW of inverters installed in Australian homes and businesses. More than 35% of the solar electricity being generated and sent out to the Australian grid comes from SMA inverters. All that experience has allowed SMA to design, test and manufacture our inverters to meet harsh Australian requirements.

It's one of the reasons why we not only design and engineer all our own products, but also manufacture them ourselves in SMA production facilities, using proven German SMA Quality systems refined over more than 35 years and which have produced more than 75GW of products globally (that's equivalent to about DOUBLE the total electricity generation capacity of ALL Australia).

The CORE1 inverter is the latest to benefit from this manufacturing experience and SMA quality. It means that you can trust in the reliability of the investment in a commercial solar system that is built on the back of SMA CORE1 inverters.

## **READY FOR TOMORROW**

A quality system should not be obsolete in just a few years because of new developments.

Thanks to new control and communication functions with the SMA Data Manager M powered by ennexOS, commercial solar systems are future proofed and ready to be integrated into new platforms, adapt to changing market requirements, and integrate new technology such as energy storage, EVs, building management systems and many others.



### CONCLUSION

With the CORE1 inverter, business owners can make significant savings on their energy bills, whilst powering their business with clean and renewable energy. Thanks to its design flexibility, it is a universal inverter for all businesses including those with complex roofs with partial shading. The CORE1 delivers you industry leading efficiency, DC oversizing capacity, and superior high temperature performance so you can generate the most energy from your solar system. At the same time you can rest-assured that the CORE1's inbuilt safety devices and SMA's high quality manufacturing process will ensure your PV system is a safe and reliable investment.





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