

Myth: ‘Microinverters are more prone to failure from heat.’

High heat is the enemy of every solar system. Panels produce less and components are subjected to extreme stress when the temperature rises. Because microinverters are located on the roof under each panel, you might think that this would doom the system. Not for an Enphase microinverter!

During the summer of 2014, extreme heat took a heavy toll on Australia, sparking bushfires and melting tar in the roadways. For three scorching weeks, **Enphase closely monitored over 2,000 microinverters. None of them shut down because of the heat.**

Enphase Microinverters cope with these conditions for two reasons. Our engineers have designed them to maintain a low thermal footprint, and our installers have kept them away from direct sunlight and heat from the roof. When Australia needed renewable energy the most, Enphase Microinverters delivered.



“We were confident in Enphase’s proven track record of providing quality equipment and performance.”

Cameron Munro
CEO
EnviroGroup
Victoria, Australia

Cool by design

Microinverters have a built-in advantage in keeping cool. Heat generated inside the device is lower than in traditional inverters because each unit converts a small amount of power, one solar module at a time.

Microinverters also get help from their enclosures, which act as a heat sink to keep the electrical components from getting too hot. These features keep our microinverters under their maximum internal operating temperature of 85°C.

Airflow and clearance

Installers who work with Enphase follow best practices to mitigate the effects of high rooftop temperatures on our microinverters. First, microinverters must be mounted beneath the solar module so there is no exposure to direct sunlight.

Installers also allow at least 1.3 cm of spacing between the microinverter and module and at least 1.9 cm to separate the inverter and the roof. In all cases, there has to be enough room for air to circulate underneath the array.

Passing the Aussie heat test

In 170 locations across Australia, **all Enphase Microinverters operated continuously throughout the record-setting heat wave of 2014**. Here's a summary of our site data.

Normally 70°C or less

During a three-week period, Enphase collected more than **67,000 data points** on the operating temperatures inside our microinverters across Australia. Less than 1 percent of them rose above 70°C.

Never exceeding 79°C

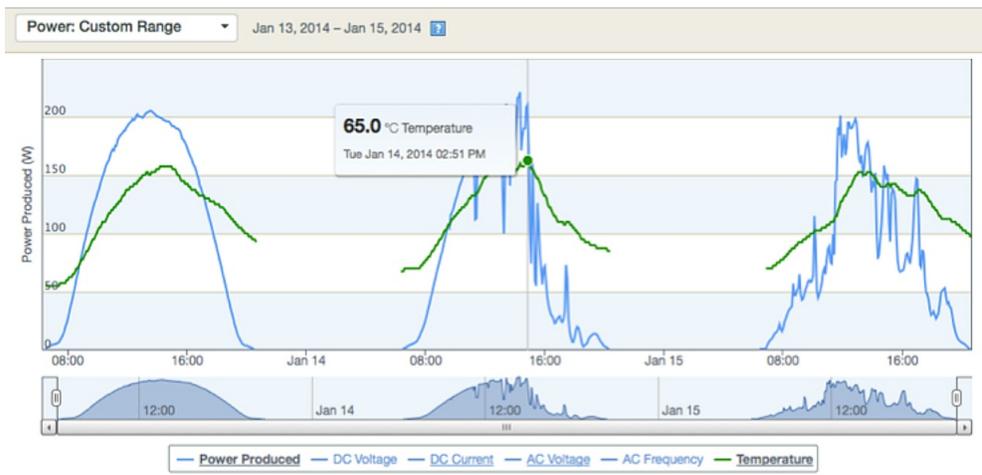
The maximum internal temperature occurred in South Australia, where an M215 microinverter reached 79°C. In other states on the mainland, top internal temperatures ranged from 73°C to 78°C

No heat-induced failures

All microinverters reporting to the Enlighten monitoring system stayed well below the internal limit of 85°C, showing that they operate reliably in some of the hottest locations in Australia.

STATE	Maximum Ambient Temp(°C)	M215 Maximum Internal Temp (°C)
QLD	38.7	78
WA	40.7	73
TAS	32.7	63
SA	45.1	79
NSW	43.3	73
VIC	45.2	77

Figure 1: Enphase M215 Microinverter internal temperature data (14/1/2014)



To learn more about the Enphase Microinverter System, visit enphase.com/au