



WARNING
Read manual
Do not work on this equipment until it is isolated from both mains and on-site generation supplies

Victron Systems
MPPT Charge Controller
www.victron.com
Made in China

Microinverter Model: DSS3

32-95VDC
20A x 2
800VA
3 BA
IP67

Maximum Input Voltage: 60VDC
Peak Power Tracking Voltage: 32-95VDC
Maximum Input Current: 20VAC
Maximum Continuous Output Current: 20VAC
Maximum Continuous Output Power: 800VA
Maximum Environmental Rating: IP67
Enclosure Ambient Temperature Range: -40°C to +65°C
Operating Ambient Temperature Range: -40°C to +65°C
0.99 (0.8 loading) - 0.8 (no loading)

Standard
3217123
5M-000029

Identification Number: 70A000000009
Work Order Number: 000013176DA0

Power Factor (Default/Selectable):
PFC class:
BIPV:
Predefine class:
Power Factor (Default/Selectable):

UL, CE, IEC, VDE, TÜV, GS, CCC, PSE, FCC, RoHS, REACH, EN60950-1, EN60950-2, EN60950-3, EN60950-4, EN60950-5, EN60950-6, EN60950-7, EN60950-8, EN60950-9, EN60950-10, EN60950-11, EN60950-12, EN60950-13, EN60950-14, EN60950-15, EN60950-16, EN60950-17, EN60950-18, EN60950-19, EN60950-20, EN60950-21, EN60950-22, EN60950-23, EN60950-24, EN60950-25, EN60950-26, EN60950-27, EN60950-28, EN60950-29, EN60950-30, EN60950-31, EN60950-32, EN60950-33, EN60950-34, EN60950-35, EN60950-36, EN60950-37, EN60950-38, EN60950-39, EN60950-40, EN60950-41, EN60950-42, EN60950-43, EN60950-44, EN60950-45, EN60950-46, EN60950-47, EN60950-48, EN60950-49, EN60950-50, EN60950-51, EN60950-52, EN60950-53, EN60950-54, EN60950-55, EN60950-56, EN60950-57, EN60950-58, EN60950-59, EN60950-60, EN60950-61, EN60950-62, EN60950-63, EN60950-64, EN60950-65, EN60950-66, EN60950-67, EN60950-68, EN60950-69, EN60950-70, EN60950-71, EN60950-72, EN60950-73, EN60950-74, EN60950-75, EN60950-76, EN60950-77, EN60950-78, EN60950-79, EN60950-80, EN60950-81, EN60950-82, EN60950-83, EN60950-84, EN60950-85, EN60950-86, EN60950-87, EN60950-88, EN60950-89, EN60950-90, EN60950-91, EN60950-92, EN60950-93, EN60950-94, EN60950-95, EN60950-96, EN60950-97, EN60950-98, EN60950-99, EN60950-100

Multi modular thinking

As it continues its global reach in what is a rapidly growing PV market, PES took the opportunity to get an update from Maxime Boiron, Global Marketing Director at APsystems, to hear what he thinks the future holds for inverter technology, in Europe and beyond.

PES: A warm welcome back to PES, Maxime. Perhaps we could begin with an overview, as you see it, of the solar PV market. How large is the market worldwide? Is there a country or region that shows signs of particular maturity?

Maxime Boiron: Over the past 10 years, the global solar market has experienced steady growth, with an average rate of around 15% year on year to reach close to 160 GW of installation capacity in 2021. According to the Wood Mackenzie analyst firm report¹, in 2022, the annual capacity will grow by 25% to reach close to 200 GW by the end of the year.

Now, if we look at global demand overview for the next 10 years, it is also forecast that the growth will be seen in all regions of the world. Here again, Wood Mackenzie predicts that global solar PV installations will grow at an annual average rate of 8% from 2022 to 2031.

Although Europe and the USA more mature solar PV markets, these are seen to be the fastest growing regions, expanding from 11 to 15% from 2022 to 2031 in Europe and even doubling in the United States, with 22%

¹ Global solar PV market outlook update Q1 2022

regional share by 2031.

PES: What are the future trends of the solar PV market? Are there any innovations coming through?

MB: The increase of the power density generated on solar roofs, with PV modules now reaching up to 600 Wp per module in some countries, is a clear trend. System owners expect manufacturers to allow them to produce more energy with less space on their roof.

As the global leader in multi-platform Module Level Power Electronics (MLPE) technology, APsystems has been addressing this trend, with a unique multi-module micro inverter range to follow the higher output power of PV.

Another movement is towards maximum security requested by all parties involved in the solar PV value chain, from the regulatory and inspection bodies, all the way through to the end-users and all solar professionals involved in asset management, installation, project development and EPC.

Therefore, micro inverters, which are innovative by nature, offering an end to end



Maxime Boiron

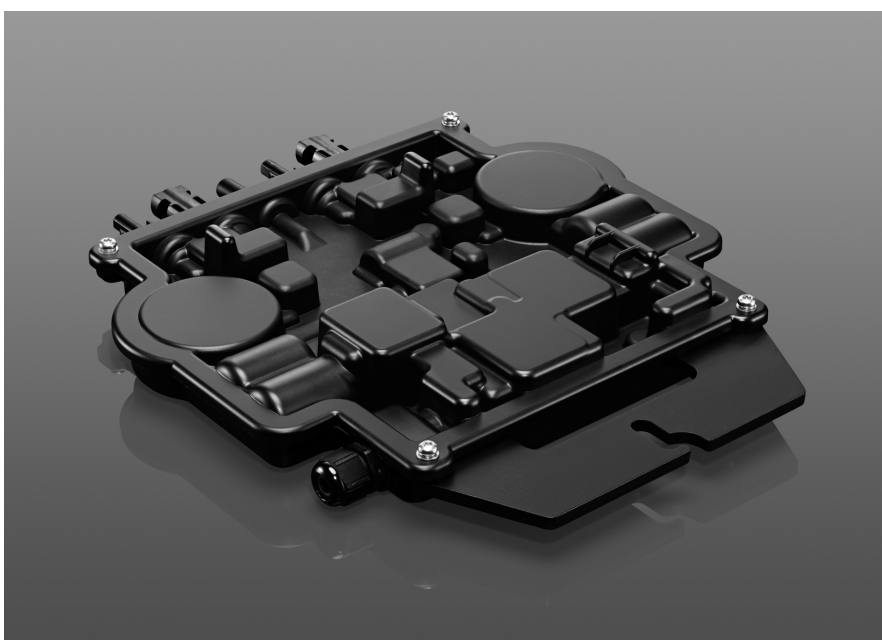
all AC grid-connected solution, have been adopted very rapidly in most rooftop markets all over the world.

Micro inverters present several advantages over traditional string inverters. Firstly, any risk of fire on a roof is reduced, as micro inverters work in parallel where the maximum DC current on the roof will not exceed 45 volts, the actual DC current of one PV module. Whereas with string inverters this current will aggregate on the roof with DC power that can reach up to 1,000 volts, inevitably presenting more risks.

The development of self-consumption patterns with the emergence of 'prosumers', i.e. consumers eager to take control of how to manage the energy coming from their house, is also a key trend that requires manufacturers to innovate.

But it is also true for solar professionals who require full online visibility of their installation fleet in order to lower their operation and maintenance costs by solving possible issues remotely. At the inverter manufacturing level, this trend requires the integration of more and more ICT on the product platforms.

At APsystems, communications technologies are also a crucial part of our innovation design process. APsystems has been a pioneer in moving its entire product portfolio to



high-speed wireless Zigbee communications. Zigbee comms are up to three times faster than conventional powerline communication (PLC), creating a local bidirectional 2.4GHz mesh network for fast and reliable data communication between the micro inverters and the gateway.

Each system owner or installer can therefore access reliable PV production data at the module level for free, via the EMA monitoring portal. This data is encrypted ensuring maximum security of all production data processed by our installers and end-users.

Lastly, we also needed to make our products interactive with power grids, a feature commonly referred to as Reactive Power Control (RPC) or reactive power factor management, that has been increasingly requested by utilities to better manage photovoltaic power spikes in the grid and facilitate its integration. This is already a requirement in countries including Germany, US, Italy or Australia, which is gradually spreading all over the world.

PES: How has the recent IPO changed the company's strategy? What do you see as the benefits of this?

MB: This year sees the introduction of APsystems on the Shanghai Stock Exchange market, bringing even greater perspectives for the years to come for the company. Although, this key milestone in the company history does not change the backbone of APsystems strategy, which has always been to heavily invest in R&D on one side, while keeping enough agility to adapt to an ever-changing emerging market on the other side.

The IPO will certainly enable acceleration of its strategy deployment, with investments dedicated to R&D, Engineering, Quality and Services while continuing to expand local teams and drive innovative product platform such as the upcoming launch of an AC storage solution to complement the current product portfolio.

The fact that the company has been growing for the past 12 years while reaching profitability every year since 2012, is primarily down to the hard work, determination, and patience of the hundreds of talented and committed people who have joined and believed in this company over the years.

PES: What is the market penetration of AP Systems worldwide?

MB: We have established a global footprint over the years, with dedicated teams and business units across all continents. With more than 2GW of products shipped to date in over 100 countries, APsystems shipped MLPE devices connecting more than 2,000,000 modules and expects to grow quicker than the market in 2022.

With a dedicated business unit based in the Netherlands and France to support the



European region, the team in Europe continues to expand, with several open positions in sales and customer support to stay close to its customers, with a local staff supporting business development opportunities, logistics and marketing activities as well as technical services.

PES: How is your R&D department structured?

MB: The DNA of APsystems has always been innovation, with more than 116 patents granted to date. Our R&D center, located in the suburb of Shanghai, is structured around hardware and software design engineering teams, certification, and testing departments, with a growing share of our staff dedicated to R&D to bring best in class quality products to market globally.

PES: What are your predictions for the market for the remainder of 2022, particularly in Europe?

MB: In Europe, the APsystems growth journey started in 2015 when Dr Zhi Min Ling, co-founder and chairman of APsystems met with Olivier Jacques, President Global BUs & Global Executive VP from APsystems. When strong leadership and visionary entrepreneurs meet with advanced solar technology foundations, the growth story can begin.

Now, seven years later, the company has established itself as a leading inverter brand for solar PV in most European countries. As proof, in 2022 the company received the TOP brand PV seal for inverters from EUPD in France and in the Netherlands, a well-known

global market survey firm that conducts annual interviews among hundreds of installers in several European countries.

With a new generation of innovative multi-module microinverters platforms deriving from local requirements and customer demand, APsystems will continue to provide great benefits to customers on residential and commercial applications, which will contribute to a steady growing business increase in Europe. In 2022 we are doubling the power of our micro inverters to address the higher power modules, but also doubling the range of products we offer to the market.

Solar professionals can now choose from the New DS3 series in single phase connecting two high power modules and ranging from 600 to 960W versions including another single-phase micro called the DS3D reaching 1800w and connecting 4 modules.

On top of this, we are releasing a range of native 3-phase micro inverters, with the QT2 connecting four modules with a 2000W power output. And later this year a QT2D will connect eight high power modules with a power of 3200 W to more actively address the small and medium commercial PV segment. This unique portfolio will bring no compromise to customers in terms of innovation and cost efficiency.

PES: Thanks for your time Maxime, we look forward to catching up with you again soon and discussing if your predictions for the market come to fruition.

www.apsystems.com