

ASRock Industrial Sets New Standard in Secure IoT Deployment with FDO Device Onboard

Imagine connecting and configuring devices on an oil rig in the middle of the ocean with limited human intervention. That's the reality of what can be achieved with the FIDO Alliance's Device Onboarding (FDO) standard. This is an example of the applications that IoT pioneer ASRock Industrial is bringing to life.

The rapid proliferation of IoT devices and Edge computing across industries has brought with it unprecedented opportunities and challenges. By 2025, over 75 billion IoT devices are expected to be connected globally, increasing complexities in device management and widening the attack surface for malicious actors. Recent studies suggest nearly 57% of IoT devices are susceptible to medium or high-severity attacks.

On the Edge: The Challenges of Industrial IoT

ASRock Industrial's customers, like many in the industry, face challenges when deploying IoT devices and edge computing solutions quickly and securely.

- **Security vulnerabilities:** Traditional manual onboarding methods leave devices vulnerable to unauthorized access and data breaches. For example, a connected IoT device may still have the original manufacturer's default password in place, which increases the risk of password-related device compromises. Manual processes also increase the risk of exposed, unmanaged devices on the network. In industries like energy and transportation, secure operations are vital to public safety and system reliability.
- **Time and cost inefficiencies:** Not only are manual processes time-consuming, hiring skilled installers is extremely expensive. When calculating the time and cost for a skilled engineer to manually onboard edge devices, it's important to include not only the technical setup time but also the travel time to what potentially may be multiple sites. ASRock Industrial estimates that before FDO, users could spend up to \$1,000 per device implementation*. With FDO the installation is not only much faster and more secure, but it is also a task that can often be handled by existing on-site staff.
- **Complexity and scalability:** Legacy onboarding approaches are complex to deploy and manage. This complexity is only further exacerbated by the remote and high-risk environments many industrial applications are in. Sending skilled engineers to these environments not only creates bottlenecks and slows scalability, it introduces safety risks that further amplify costs.
- **Lack of interoperability:** The IoT space is very fragmented, with multiple proprietary platforms and operating systems. Existing "zero-touch" solutions are restricted in compatibility, making it hard to support clients across different sectors.

Corporate overview:



ASRock Industrial, a global leader in industrial systems and motherboards, has become one of the first vendors to provide FDO-enabled compute solutions for industrial applications. The company offers industrial PC systems, motherboards, edge computers, and other products for industries such as automation, robotics, entertainment, and security, as well as cutting-edge systems for smart cities, energy firms, pharmaceuticals, automotive and more to customers around the world. ASRock Industrial is leading the way in the industrial IoT industry with its FDO certified solutions that make device onboarding more efficient, less vulnerable, and more scalable.

"FDO's advanced security framework enables us to deliver unparalleled reliability and adaptability, empowering our clients to scale confidently in increasingly complex environments."

– Kenny Chang, Vice President of Product and Marketing Division, ASRock Industrial

Creating an FDO Solution

To solve these challenges, ASRock Industrial turned to FIDO Device Onboard (FDO), and in doing so has become one of the market's earliest adopters of this compelling technology. ASRock Industrial has integrated FDO into its flagship iEP-5010G series, a robust edge controller built for demanding industrial applications and harsh environments. The iEP-5010G series can operate within a wide temperature range of -40 to 70 degrees and supports 6-36VDC power inputs, 4G LTE, 5G, Wi-Fi 6E, and Bluetooth, and offers the most flexible I/Os and expansion options, making it a fit for industrial automation, robotics, transportation and more.

The ASRock Industrial FDO solution has been designed with FDO's advanced features in mind. It delivers end-to-end FDO onboarding capabilities, encompassing all critical FDO functions: manufacturer, owner and rendezvous server.

Rather than hard programming devices for each different operating system, the iEP-5010G series device controller can be deployed as one system without pre-installation of OS or additional programming. This simplifies manufacturing and provides a better customer experience with the flexibility to decide OS requirements later in the process.

The FDO standard and associated certification program ensure consistency and interoperability. Standardized onboarding means devices are consistently and correctly deployed every time, removing the risk of errors for ASRock Industrial's customers. Most importantly, the open standards-based approach means it can work seamlessly with other partners in the industry and support players across the globe.

Results and Impact

While early implementation results are still being gathered, ASRock Industrial anticipates significant benefits for both the company and its customers.

One of ASRock Industrial's earliest use cases lies in the smart city domain, where their FDO-enabled iEP-7020E series devices leverage FDO technology to automatically onboard hardware and software to connect electric vehicle (EV) charging points and related devices seamlessly. By enabling remote monitoring of charging stations across multiple locations, FDO has eliminated the need for engineers to visit sites physically. Its AI-driven analytics have dramatically enhanced operational efficiency, while remote surveillance has addressed key challenges such as charger hogging, vandalism, and unauthorized access. This capability ensures more efficient and timely incident management. As urban

demands evolve, FDO serves as a robust foundation for scalable, secure deployments, delivering sustained benefits over time.

Looking Ahead

ASRock Industrial's investment in FDO puts us in a prime position to meet the rigorous demands of Industry 4.0 advancements and provide customers with security levels that protect against the expanding edge threat landscape. In 2024, ASRock Industrial became one of the first to achieve FDO certification, passing the FIDO Alliance's rigorous independent testing processes. The results of this testing demonstrate that ASRock Industrial's products fully meet the FDO specification, meaning partners and clients can trust the security, interoperability and FDO functionality of these solutions.

FDO certification also plays an important role in differentiating ASRock Industrial by making their products more marketable in that they are capable of meeting the needs of a growing number of RFPs that call out FDO. Additionally, it reduces the company's need to spend time and effort in intensive vendor bake-offs, allowing ASRock Industrial to spend more time innovating its product lines and value-added services.

“Deploying FDO has marked a pivotal shift for ASRock Industrial, establishing a new benchmark in secure, scalable onboarding for industrial edge AIoT solutions. This deployment cements ASRock Industrial's leadership in industrial computing security and sets the stage for us to shape the future of Industry 4.0 with solutions that are both resilient and future-ready.”

– Kenny Chang, Vice President of Product and Marketing Division, ASRock Industrial
