

SOLUTION BRIEF

Ruggedized edge computing solution



Introduction

Edge computing is a distributed computing paradigm that brings compute and data storage closer to the location where the data is generated. The innovation and advancements in low-power processors and higher density memory support higher performance computing in a smaller form factor than traditional data center compute servers. Compute can then be integrated into smaller devices at the edge, the point of data acquisition. This enables use cases that require improvement in response time, bandwidth and security to deliver a near real-time experience.

We developed a ruggedized edge computing solution for a tier-1 cloud service provider to support emerging use cases like autonomous vehicles and connected vehicle-to-everything communication (V2X) in smart cities. Edge computing will play a critical role in this emerging technology with low-latency computing, processing speed and communications resources located near the vehicles.

Unlike most data center computing hardware that comfortably resides in strictly controlled environments, this hardware must withstand or be protected from the outdoor elements, including precipitation, lightning, dust, temperature and humidity. It also needs to be physically secure from vandalism and intrusion. We have deep and broad experience in mechanical, thermal and system design to deliver hardened solutions with unsurpassed quality.

Flex solution

We have teams of experts who specialize in mechanical design and engineering, data transmission, cloud storage and system integration. Our extensive cross-industry experience with hundreds of companies makes us well-equipped to meet the challenge of developing a ruggedized edge computing solution.

- **System engineering:** From concept to finished product design, we use modeling and simulation tools, focusing on technology selection and rapid prototyping of proof-of-concept systems.
- **Mechanical engineering:** We engage at any stage in the product development cycle to create detailed designs, such as thermo-electric cooler (TEC) based solutions to withstand extreme thermal variations and weather conditions, develop and test tooling and ultimately transfer to mass production.
- **Electrical engineering:** Creating high speed designs, including motherboard and power distribution boards optimized for edge, is a core competency for Flex. Integration, electrical testing and high-speed signal integrity were instrumental in validating the advanced technology in this system.
- **Analysis and testing:** We provide failure analysis, metrology development, test developing and manufacturing from prototype to volume production and reliability testing.
- **Compliance and certification:** Products are designed to meet all compliance and certification requirements.

High-level features

The key high-level features are listed in the table below. These can all be customized by Flex to meet unique requirements.

Edge computing solution	Lightweight and outdoor	Physical security	Lock and fixed on light poles
	Based on leading microprocessor supplier platform	IP rating	IP65
Single processor		Humidity	5%~95%
Single GPU	Machine learning and AI	Temperature	Op: -25°C~55°C, Non-OP: -40°C~85°C
Enclosure ingress rating	IP65- water resistance	Dimensions	650(W)*690(H)*285(D)mm
Cooling	Several fans	Weight	26 kg

Partner with Flex

Accelerate your time to market by partnering with Flex. Our design and manufacturing services can help you develop your next edge compute product, scale to volume production and provide the supporting supply chain and forward/reverse logistics. Our global scale also provides regional presence to tailor your tax and trade structures.

Our advantage

- Accelerate time to market with our best-in-class engineering and design capabilities from concept to production
- Leverage our deep manufacturing experience to move quickly from design through NPI to mass production
- Limitless scale with our global supply-chain expertise, combined with worldwide distribution and circular economy services

Learn more at flex.com

Flex (reg. No. 199002645H) is the manufacturing partner of choice that helps a diverse customer base design and build products that improve the world. Through the collective strength of a global workforce across 30 countries and responsible, sustainable operations, Flex delivers technology innovation, supply chain, and manufacturing solutions to various industries and end markets. For more information, visit flex.com.