

# ADVANTECH

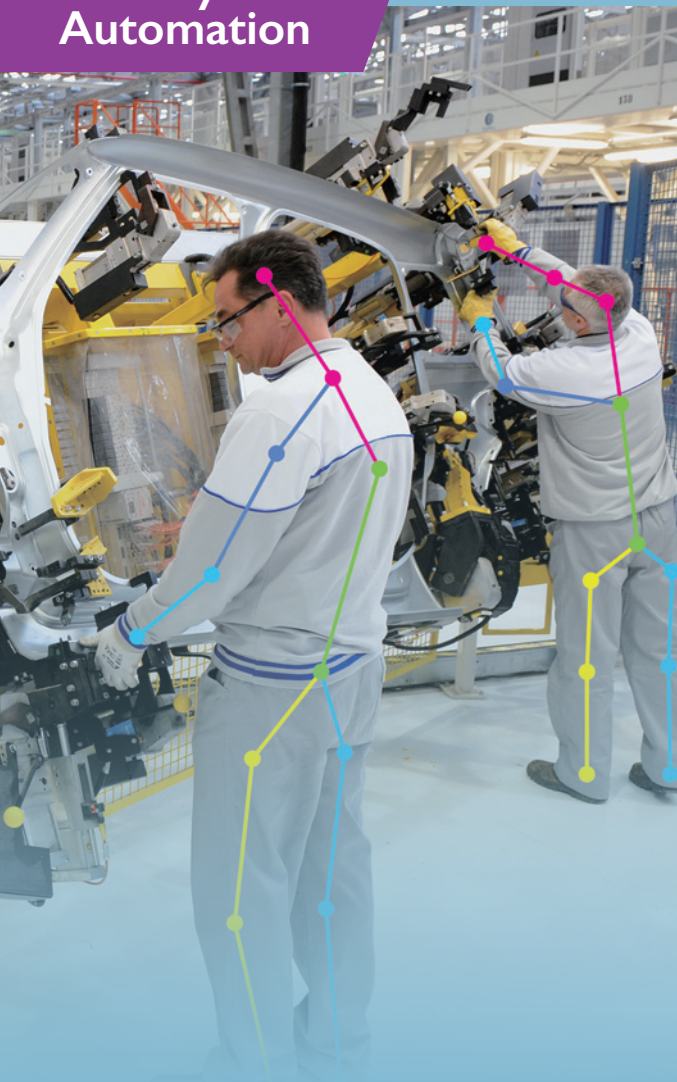
Enabling an Intelligent Planet

## Edge+ Automation Success Story eBook

Automation  
machine

Product

## Factory Automation



Region

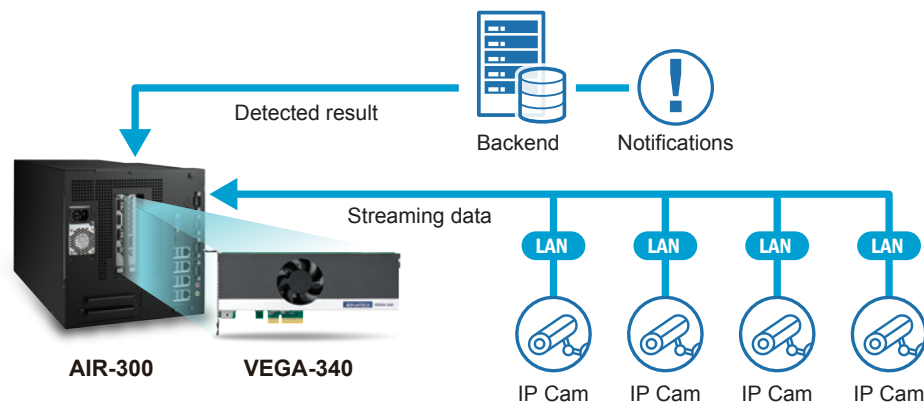
Indonesia

# AI-enabled On-site Production Line Monitoring

Site managers encounter difficulties monitoring conditions within factories. This customer combined an edge AI inference system with IP cameras that monitor operators' movements on factory floors. This system identifies abnormal behavior — such as lingering or working without gloves. In this application, Advantech's AIR-300 collects data from camera video streams installed at each workstation. It conducts real-time AI analysis to detect whether operators' behavior complies with pre-specified SOPs and relays these results to a central database, where supervisors remotely monitor and analyze the data. This improves results and improves performance and efficiency.

### Benefits:

- High Performance inference system with Intel® Xeon® CPU
- High bandwidth 4 x GbE and max. 20TB storage capacity
- VEGA-340 AI acceleration with power efficient Intel® Myriad™ X VPU





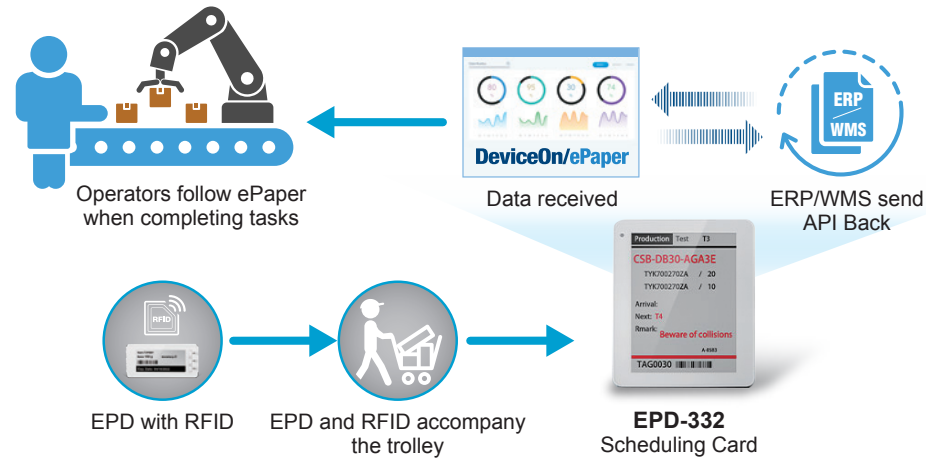


## ePaper Shortens Production Line Communication Threads

Advantech's M9 facility uses around one-hundred factory trolleys to carry incomplete products through different production stages. Operators used to have to memorize which trolley carried which item, when that item entered production, and where that item started/finished. Implementing ePaper devices streamlines this process and makes production more efficient. These solutions also enable managers to measure and control production processes.

### Benefits:

- ePaper devices travelling between different routers stay connected
- Improves production line efficiency and time management
- Reduces inquiry time and error rates by 5% per month

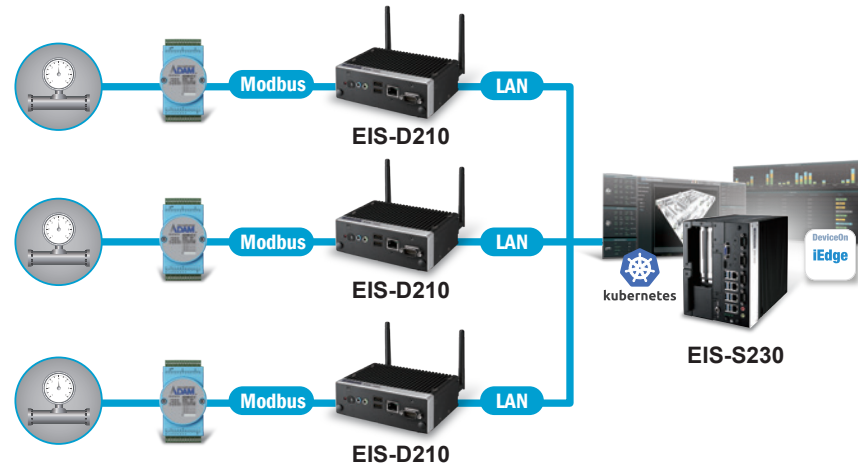


# Monitor Semiconductor Production Air Pressure in Real Time

Semiconductor manufacturing necessitates diffusion equipment with fixed air pressure levels. As such, semiconductor plants rely on centralized air delivery systems for individual production units. These centralized systems are problematic and sometimes deliver inconsistent pressure levels. Individual machinery sets can be independently monitored, but accurately determining air-pressure remains difficult and results in low yield rates. This company sought to remedy the issue by developing a real-time air pressure monitoring system.

### Benefits:

- Digitalizes analog air pressure data for collection and visualization
- Enables real-time air pressure monitoring and prompt detection
- Reduces equipment downtime risks using immediate warning notifications while boosting production capacity and improving yield rates



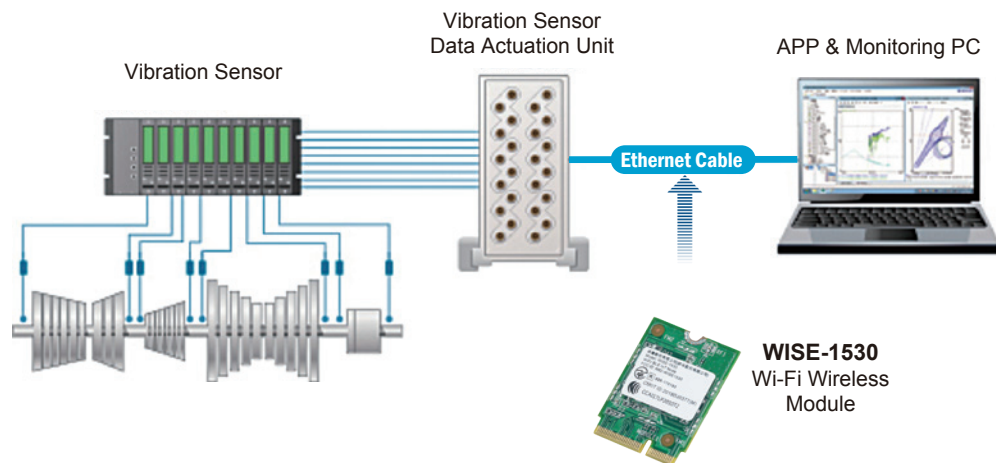


# Wi-Fi Module Enables Vibration Monitoring via Low-wiring Solution

An estimated 40% of factory equipment problems are caused by vibration from rotating machinery. A vibration analysis and diagnosis service provider in Japan previously used an Ethernet based vibration sensor for target monitoring. This sensor required extensive installation and maintenance, necessitating a system with minimal cabling. To this end, the Japanese company began using Advantech's WISE-1530 solution.

### Benefits:

- Easily embedded via M.2 Connector
- Japanese certified Wi-Fi module
- Avoids unnecessary Ethernet wiring



# Automatic Welding Machine Monitoring with Customer-centric Demand

Nogata Seiki, an automobile parts manufacturer, wanted to visualize the operating status of their equipment in order to realize more efficient production processes, implement appropriate human resources training, and reduce maintenance costs. Advantech and its eco-Partners are meeting this challenge by helping them visualize the production process. To this end, they are building a dashboard based on customer requirements using data obtained via PLC in an automatic welder.

### Benefits:

- Eases machine data collection with edge-to-cloud integrated system
- Customer-centric dashboard builder with development tools — NodeRed and Grafana
- Fanless, rugged and highly expandable product designs



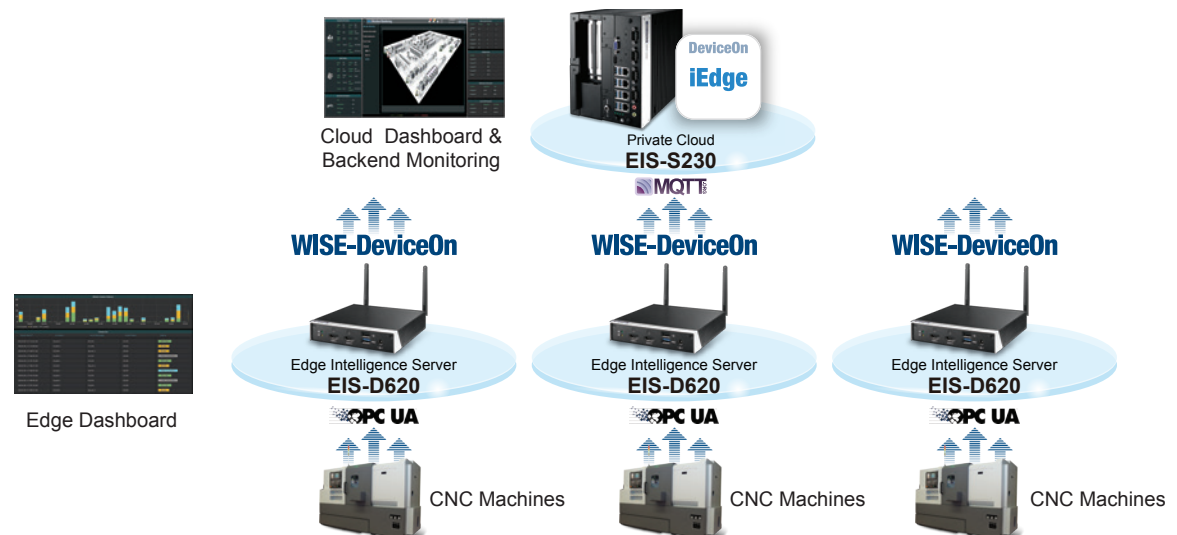


# Improving CNC Machine Value and Accelerating Business Transformations

New AIoT technologies enable the retrieval of equipment status and production information from CNC machines. This data can be sent to the cloud for analysis where it helps improve overall equipment effectiveness (OEE), reduces operational costs, and empowers digital transformation. The company in this particular case decided to develop a CNC machine remote monitoring management solution aimed at improving after sales service and efficiency. This system reduces the labor, resource, and time costs accrued by maintenance.

### Benefits:

- Powerful data visualization features enable swift dashboard creation in the cloud or at the edge, and fulfills diverse information requirements for relevant staff
- Remote CNC machine monitoring, health diagnosis, and real-time troubleshooting
- Flexible connection solution helps clients receive equipment data for value-added services and streamlined maintenance operations

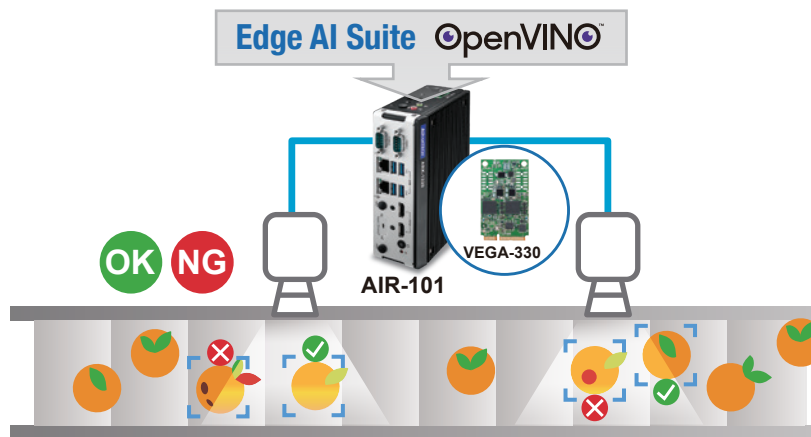


# AI-driven Fruit Grading and Inspection

Traditional fruit grading and inspection — with human eyesight or automated grading machines — is time-consuming, labor-intensive, and costly. Fortunately, innovative AI technologies improve inspection efficiency and precision. Fruit sent to grading machines are scanned by IP cameras and sorted according to appearance, size, and color according to an AI model. This fruit is then inspected using other methods to ensure quality. This customer leveraged an Advantech AIR-101 AI inference system and VPU vision processor for fruit grading. This reliable system provided efficient visual computing performance, multiple I/O interfaces, and DIN rail design to deliver high precision grading and allow customers to easily deploy.

### Benefits:

- Low power consumption and high scalable VPU, more affordable than GPU and FPGA solutions
- Edge AI Suite and Intel® OpenVINO™ toolkit accelerate deployment
- Rich I/O interface for various connected devices — including cameras, scale sensors, code scanners, and printers





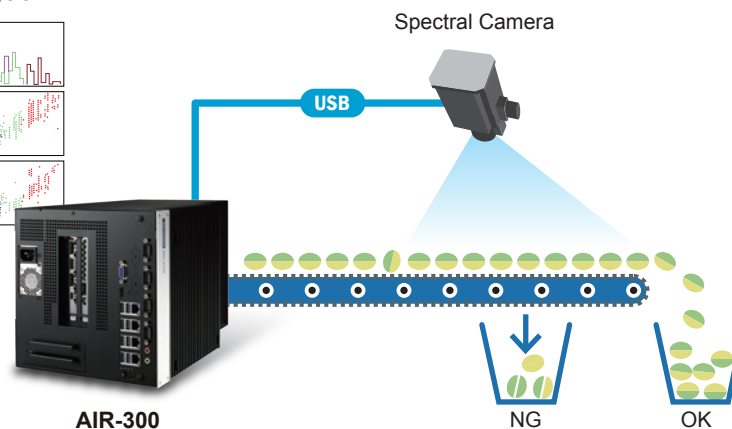
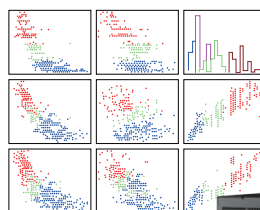
# AI-powered Automatic Pharmaceutical Tablet Inspection

Traditional pharmaceutical industry vision-based systems may not be capable of identifying new products/models, or detecting defects in products with similar colors/shapes. AI technology presents a solution to these problems. Our customer used the Advantech AIR-300 AI system with multivariate analysis algorithms to inspect large numbers of tablets with a high degree of accuracy. AIR-300 processes and analyzes large volumes of spectral data captured from hyperspectral cameras at high scan rates, enabling it to identify defects in real-time. AIR-300 supports the deployment of newly trained/retrained models for continuous optimization.

### Benefits:

- Powerful Intel Xeon CPU and an NVIDIA GPU card enable simultaneous inspection of multiple spectral bands at high speeds
- DDR4 SO-DIMM memory supports up to 32GB
- Supports up to 260W PCIe x16 high power GPU card

Multivariate analysis

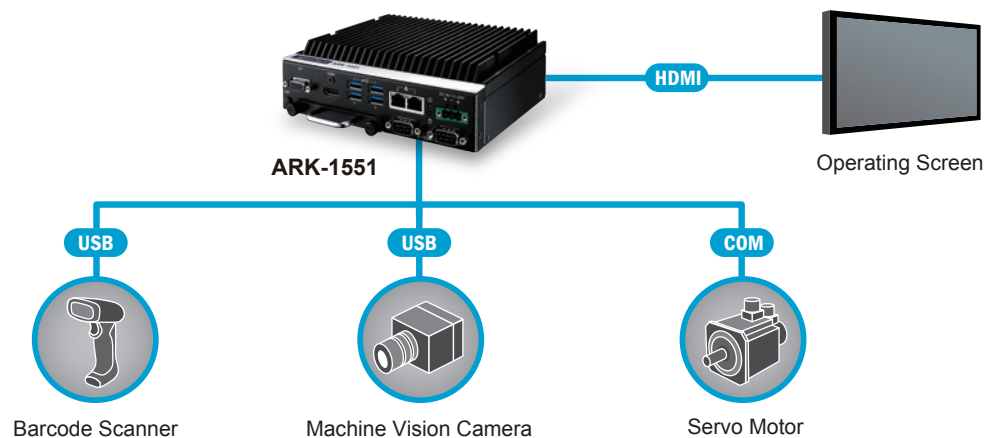


# High-speed PCB Inspection

IC surface marking inspection uses image processing technology and a trained database of characters to recognize anomalies on complex parts and surfaces without the use of manual labor. As the controller of an PCBA IC marking inspection system, ARK-1551 supports connection with high speed, high resolution vision camera and servo motor. It reliably and precisely processes multi-angle images while simultaneously conducting position alignment via a servo motor and performing OCR inspection and label printing. These capabilities improve manufacturing efficiency and quality control.

### Benefits:

- Provides the computing power needed to process high quality images and multitask
- Supports diverse I/O for various devices and peripherals
- Supports fanless operation and wide range power input for factory environments



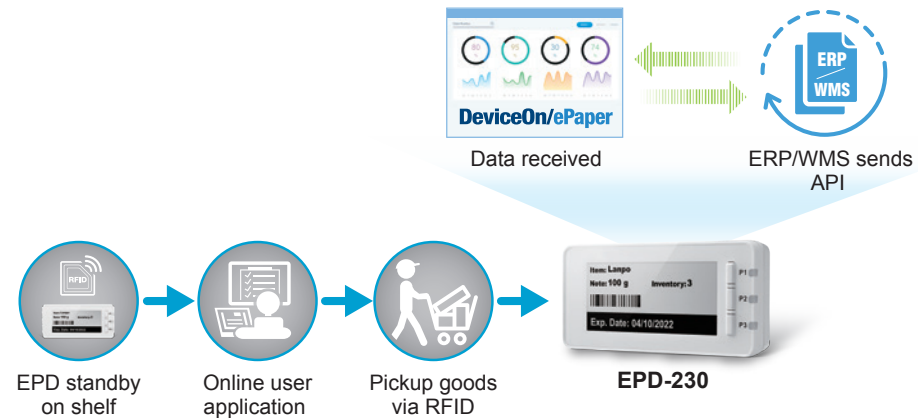


# ePaper Solution Promptly Coordinates Visualization, Verification, and Stock Information

This customer's facility had about 1500 storage locations — forcing operators to waste time looking for materials, and resulting in incorrect stock numbers. ePaper solutions allowed this customer to increase efficiency and stock management accuracy by enabling visualization and RFID. Once collected, data was analyzed via Advantech's DeviceOn/ePaper solution.

### Benefits:

- Displays real-time inventory by integrating RFID technology
- Visualizes LED and picker information to improve picking process
- DeviceOn/ePaper enables operators to provide fast, efficient feedback on requests

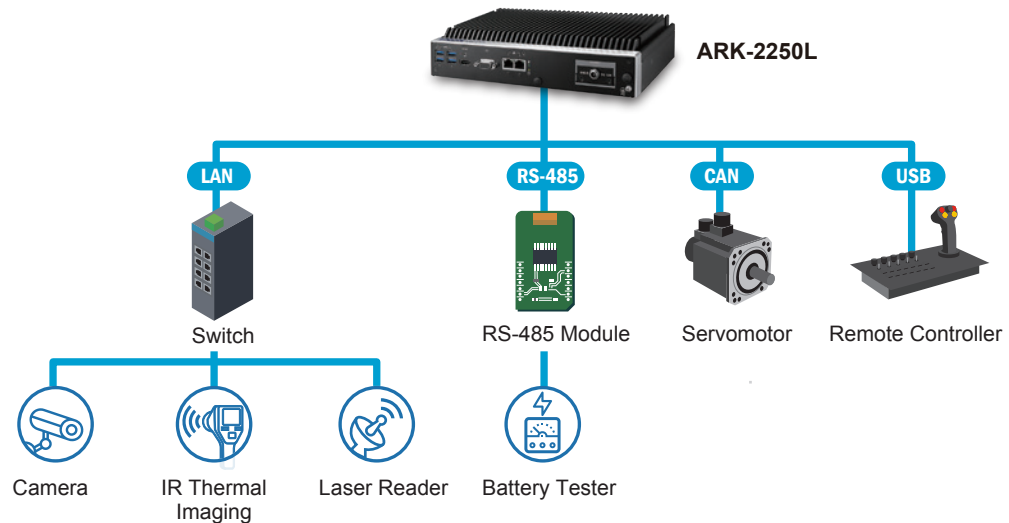


# Power Substation Inspection Robot

The proliferation of disparate unmanned power substations has made demands for inspection robots increasingly urgent. Advantech's ARK-2250L is used as the brain of this battery-powered inspection robot controller. It enables this robot to use a high-resolution CCD camera, a thermal infrared imager, and a laser radar — enabling 24/7 remote monitoring. In addition, this robot uses alerts to notify relevant personnel upon detecting an abnormality. Information such as inspection data and location is transferred to control centers via 5G, 4G, or Wi-Fi wireless channels. This reduces downtime and enables preventative maintenance.

### Benefits:

- High-performance Intel® processor quickly processes large volumes of data
- Multiple I/O connections for various sensor and device integration
- Supports 5G/4G/Wi-Fi modules
- Fanless design with wide operating temperature support (-20 ~ 60 °C/-4 ~ 140 °F)





# Edge<sup>+</sup> Solution High-lights



## Edge Intelligence Software and Cloud

WISE-DeviceOn improves management, enables real-time remote access, and facilitates efficient operation. It leverages the Cloud and integrated domain-focused application software



## AI Software and Inference

Empower AI at the edge and realize real-time intelligence in AGV/drones, defect inspection, traffic monitoring, and medical imaging applications



## Wireless Connectivity

Demystify AIoT and leverage 5G/Wi-Fi 6 to enjoy faster speeds, millisecond latency, and reduced network congestion

## Regional Service and Customization Centers

**China** | Kunshan  
86-512-5777-5666

**Taiwan** | Taipei  
886-2-2792-7818

**Netherlands** | Eindhoven  
31-40-267-7000

**Poland** | Warsaw  
00800-2426-8080

**USA** | Milpitas, CA  
1-408-519-3898

## Worldwide Offices

### Asia Pacific

**Taiwan**  
Toll Free 0800-777-111  
Taipei & IoT Campus 886-2-2792-7818  
Taichung 886-4-2372-5058  
Kaohsiung 886-7-392-3600

**China**  
Toll Free 800-810-0345  
Beijing 86-10-6298-4346  
Shanghai 86-21-3632-1616  
Shenzhen 86-755-8212-4222  
Chengdu 86-28-8545-0198  
Hong Kong 852-2720-5118

### Middle East and Africa

Israel 072-2410527  
Turkey 90-212-222-0422  
Turkey-Bursa 90-224-413-3134

### Asia Pacific

**Japan**  
Toll Free 0800-500-1055  
Tokyo 81-3-6802-1021  
Osaka 81-6-6267-1887  
Nagoya 81-0800-500-1055  
Nogata 81-949-22-2890

**Korea**  
Toll Free 080-363-9494/5  
Seoul 82-2-3660-9255

**Singapore**  
Singapore 65-6442-1000

**Malaysia**  
Kuala Lumpur 60-3-7725-4188  
Penang 60-4-537-9188

**Thailand**  
Bangkok 66-02-2488306-9

**Vietnam**  
Hanoi 84-24-3399-1155  
Hochiminh 84-28-3836-5856

**Indonesia**  
Jakarta 62-21-751-1939

**Australia**  
Toll Free 1300-308-531  
Melbourne 61-3-9797-0100

**India**  
Bangalore 91-94-4839-7300  
Pune 91-94-2260-2349

### Europe

**Netherlands**  
Eindhoven 31-40-267-7000  
Breda 31-76-523-3100

**Germany**  
Toll Free 00800-2426-8080/81  
Munich 49-89-12599-0  
Düsseldorf 49-2103-97-855-0

**France**  
Paris 33-1-4119-4666

**Italy**  
Milan 39-02-9544-961

**UK**  
Newcastle 44-0-191-262-4844  
London 44-0-870-493-1433

**Spain**  
Madrid 34-91-668-86-76

**Sweden**  
Stockholm 46-0-864-60-500

**Poland**  
Warsaw 48-22-31-51-100

**Russia**  
Moscow 8-800-555-01-50  
St. Petersburg 8-812-332-57-27  
8-921-575-13-59

**Czech Republic**  
Ústí nad Orlicí 420-465-524-421

**Ireland**  
Galway 353-91-792444

### Americas

**North America**  
Toll Free 1-888-576-9668  
Cincinnati 1-513-742-8895  
Milpitas 1-408-519-3898  
Irvine 1-949-420-2500  
Ottawa 1-815-433-5100  
Chicago 1-888-576-9668

**Brazil**  
Toll Free 0800-770-5355  
São Paulo 55-11-5592-5367

**Mexico**  
Toll Free 1-800-467-2415  
Mexico City 52-55-6275-2777