



Features

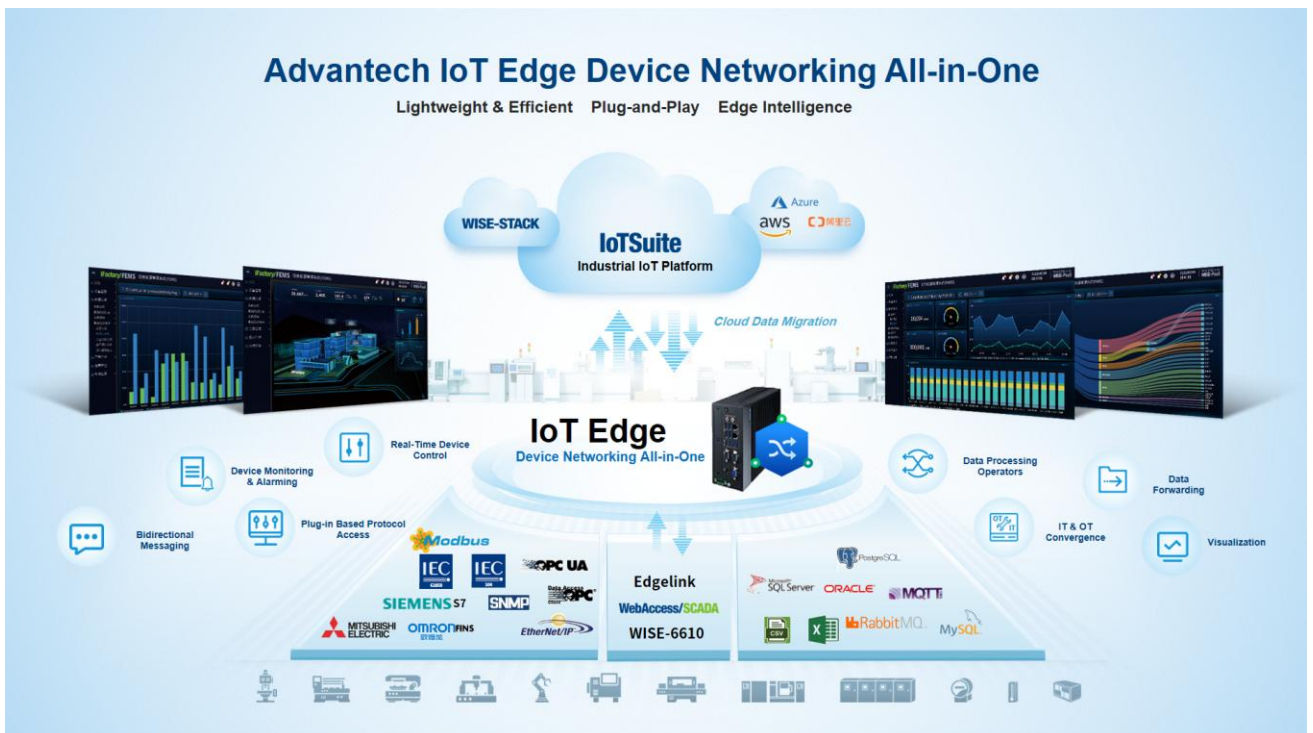
- Supports data integration from common industrial devices and industrial systems.
- Seamlessly integrates with Advantech WebAccess SCADA, EdgeLink gateways, and third-party data acquisition systems for rapid deployment.
- Enables real-time device monitoring and full lifecycle management.
- Open architecture enables easy data forwarding to third-party services or platforms for system integration and application development.
- Built-in data acquisition, cleansing, analysis, and visualization to meet real-time edge data processing requirements.

Introduction

The Advantech IoT Edge Device Networking All-in-One is an integrated hardware-software solution that combines Advantech's high-performance industrial hardware with a pre-installed IoT Edge software package. System integration and basic configuration are completed at the factory, significantly reducing deployment complexity and truly enabling plug-and-play. The Device Networking All-in-One supports dozens of industrial protocols—including Modbus, OPC UA, MQTT, and S7—allowing seamless integration of heterogeneous devices such as PLCs, sensors, and instruments, thereby enabling unified management across multiple brands and device types. At the edge, it provides real-time data acquisition, local buffering, data cleansing, and real-time analytics, supporting alarm triggering, event correlation and data write-back to ensure fast response for critical operations.

Built-in 2D/3D visualization modules allow rapid creation of dynamic monitoring dashboards and digital twin scenarios without additional development. Data can be stored locally as required and securely forwarded to the cloud or other IT systems via protocols such as MQTT and Kafka. Designed to meet industrial-grade reliability standards, the system ensures long-term stable operation in harsh environments.

Ideal for production line digitalization and end-edge-cloud collaborative smart manufacturing, the IoT Edge Device Networking All-in-One enables rapid deployment of a secure, efficient, and scalable IoT infrastructure with lower total cost of ownership.



Software Features

- Offers flexible protocol configuration to support data integration from common industrial devices and systems.
- Enables model-based data acquisition, allowing data collection to be managed according to distinct object models.
- Seamlessly integrates with Advantech WebAccess SCADA, EdgeLink gateways, and third-party data acquisition systems for rapid deployment.
- Supports bulk operations, including batch configurations import and export across modules to improve operational efficiency.
- Monitors connection status in real time to ensure reliable device connectivity.
- Features an open architecture supporting data forwarding via MQTT, Kafka, and other protocols, enabling easy third-party system integration and application development.
- Provides real-time analytics with support for computation and filtering of ingested data.
- Delivers near real-time data collection, cleansing, aggregation, custom script execution, and visualization to meet diverse data analysis requirements.
- Supports anomaly-based device alerts for effective real-time monitoring of equipment status.
- Includes a no-code data reporting tool that visualizes critical data in real time.
- Equipped with a 3D visualization tool to build immersive digital twin scenes.
- Supports plug-in-based extension for both communication protocols and analytical operators.
- Offers a comprehensive set of RESTful APIs for querying devices, data, and alarm notifications—enabling easy secondary development.
- Delivers stable performance with support for high-volume tag/data point acquisition and reliable data transmission.
- Supports cloud-edge collaboration, synchronizing device models, configurations, and data from the edge to the cloud, enabling centralized management of edge nodes from the cloud.

Function List

Module	Basic Functions	Function Description	IoT Edge
Device Management	Device model definition	Customized device models, including module definitions and property definitions.	✓
	Device management	Provides device creation, modification, deletion, update, and status management, supporting large-scale device management.	✓
	Device shadow	Supports querying device shadow data and setting desired values for device shadows. Provides a device shadow caching mechanism to address the issue of unreliable communication in unstable network conditions.	✓
	Device reverse control	Supports reverse control of devices.	✓
	Bulk device operations	Supports batch operations, including batch creation of device models and batch setting of sub-device extended information.	✓
Data Collection	PLC device access and data collection	Supports Siemens, Mitsubishi PLC (Fx and Q series), Beckhoff PLC, Omron PLC, etc.	✓
	Industry protocol access and acquisition	Supports Modbus (RTU, TCP), OPC-UA and other protocols.	✓
		Supports OPC-DA, S7, Ethernet/IP and other protocols.	✓
		Supports SNMP, BLE v4.0, CAN, GPIO, Profibus DP, DLT645-2007, DNP3.0 and other protocols.	✓
	Native protocol access and data collection	Supports HTTP & MQTT Protocol access, and customizable MQTT format.	✓
	IT system data collection	Supports data acquisition in specified formats from CSV, Excel, and ODBC (MS SQL Server 2019, MySQL 8.0.29, PostgreSQL 10.5, Oracle 11g). The ODBC sub-device does not support write-back operations; it does not support virtual attributes (virtual measurement points), static attributes, or expressions; when acquiring data from a database via ODBC, the data table must contain a timestamp field of datetime type; ODBC data acquisition is applicable to scenarios where the fields to be read are distributed across columns of the data table; it is not applicable to scenarios where all fields are combined into a single column of the data table.	✓
Data access and collection expansion	Supports extending device connectivity and data acquisition through gRPC-based plug-ins, with driver plug-ins not limited by development language.	✓	

Module	Basic Functions	Function Description	IoT Edge
Device Alert	Device alert rules	Supports setting alert rules based on device data, enabling abnormal alert and notification.	✓
	Device alert query	Supports querying real-time and historical device alerts.	✓
	Device alert data visualization	Supports displaying device alert information on the dashboard.	✓
Notification	Multi channels	Supports multiple notification channels: Email, SMS, and real-time mobile pushes (LINE, WeChat, WhatsApp, DingTalk, etc.).	✓
	Setting messages	Default notification content: Notification templates can be pre-configured, and variable placeholders allow dynamic replacement of values within the template. Different notification channels Supports different template formats.	✓
	Cross-system notifications	Webhook notifications: Supports notifications via Webhook, allowing flexible configuration of third-party APIs. Common HTTP methods and mainstream request types (JSON, XML) are supported.	✓
	Multi tenant	Multi-tenant management: Provides multi-tenant management features, with isolated configurations for each tenant. Management and functional permissions can be configured according to user roles within each tenant.	✓
	Notification logs	Message log query: Offers message history query capabilities for subsequent review and analysis. Logs include message status, delivery results, content, etc. If a message fails to send, the system will automatically retry up to 3 times.	✓
Gateway Management	Device lifecycle management	Provides management functions for Advantech gateway devices, including addition, deletion, modification, query, and device status monitoring.	✓
	Advantech gateway integration	Supports integration with Advantech WebAccess, EdgeLink, and WISE-6610 gateway devices.	✓
	Sub-device management under gateway	Enables management of sub-devices connected to the gateway, including configuration, querying, status display, and reverse control of WebAccess/EdgeLink device values.	✓
Historical Data Storage	Historical data storage	Supports storage of historical data from devices.	✓
	Historical Data Query	Supports retrieval and query of stored historical data from devices.	✓
Time Series Analysis	Time series analysis	Supports time series analysis of device data, allowing selection of any time range to view point values. Also supports downloading analyzed data.	✓
Real-time Analysis	Data source (device data)	Supports real-time device data and aggregated data as sources for real-time analytics. Supports using device models as input for batch configuration parameter settings.	✓
	Scenario-based triggering	Supports scenario linkage functionality, enabling triggering of other devices based on conditions met by a specific device or at scheduled times.	✓
	Computational operators	Supports arithmetic operations (addition, subtraction, multiplication, division), common mathematical functions, hash calculations, bitwise operations, and string function operations.	✓
	Aggregation operators	Supports common aggregation calculations such as maximum, minimum, average, sum, first value, last value, difference, and count. Also supports common window types.	✓
	Custom time window	Supports aggregation operations within user-defined time windows, with configurable parameters and time window ranges.	✓
	Accumulation window	Supports conditional activation and deactivation of accumulation windows, performing aggregation when the condition is met.	✓
	Change detection	Detects changes in attribute values over time sequences within a specified period, recording the start time, end time, and jump variable values.	✓
	Data analysis – data filtering	Supports filtering data streams based on specified conditions and forwarding the filtered data to the next node.	✓
	Data analysis – JavaScript custom script	Supports processing complex logic relationships using custom JavaScript scripts. The script supports AI code generation and can retrieve historical device data as well as write back values to device points.	✓
Data analysis – alarm operator	Supports configuring alarm conditions; once an alarm is triggered, the alarm message is output to the next node.	✓	

Module	Basic Functions	Function Description	IoT Edge
Real-time Analysis	Data analysis--peak valley flat period	Supports configuration of peak, shoulder, and off-peak period analysis in energy consumption calculation scenarios.	√
	Data analysis--data output	Analyzed data is forwarded via Kafka or MQTT, optionally transformed by custom scripts; supports write-back to device attributes, storage in the default database (full or partial), and forwarding to third-party databases (InfluxDB 1.8, MongoDB 4.0, MS SQL Server 2019, Oracle 11g, MySQL 5.0).	√
	Data analysis--visualization data source	Displays analysis results on "Dashboard".	√
Log Service	Service log	Supports recording operation logs for adding, deleting, or modifying device models or devices, as well as writing back device attributes. Also supports device error logs.	√
Cloud-edge Collaboration	Cloud-edge collaboration	Supports standalone IoT Edge operation and data synchronization to IoTsuite for collaboration.	√
Secondary Development Scalability	Data collection pluginization	Supports extending data collection via a plugin-based approach, enabling the integration of additional data sources.	√
	Data source pluginization	Supports extending data forwarding sources through a plugin-based approach, allowing more diverse data to be used as data sources.	√
	Compute operator pluginization	Supports extending computing modules via a plugin-based approach, enabling more varied computations and scalable computing capabilities.	√
	Forwarding target pluginization	Supports extending data forwarding destinations through a plugin-based approach, allowing data to be delivered to more services or applications.	√
	Extensible visualization plug-in	Supports extending visualization plugins via a plugin-based approach, enabling more diverse panel displays.	√
2D Visualization: Dashboard	Data source	Binds IoT Edge-related data sources: including standard simple Json data source and other independent data sources such as IoT Edge data sources, TestDB data source, real-time analytics data source, asset data source, alert data source, DataInsight data source, and hybrid data sources.	√
	Chart presentation	Supports 90+ chart components, including line charts, bar charts, pie charts, tables, etc., to meet statistical and data reporting needs in various application development processes.	√
	Report export	Supports report export functionality, allowing pages to be exported as PDF or Excel files. Includes scheduling and on-demand tasks, as well as automatic email delivery.	√
	Mobile device display	Provides a companion mobile app, allowing panels or applications created on the PC to be viewed anytime and anywhere on mobile devices. The display can be grouped and arranged in styles better suited for mobile viewing.	√
	Large-screen display	Supports adaptive display for 4K and 8K large screens, with customizable background color, background image upload, and configurable border effects. Panel titles can be set, and customers can freely combine elements according to their scenarios or directly choose from built-in styles.	√
	Unified portal	Users can build their own unified portal with SRP-Frame through no-code configuration.	√

Module	Basic Features	Function Description	IoT Edge
3D Visualization: SaaS Composer	Data source	Binds IoT Edge-related data sources: including IoT Edge data sources, Asset data sources, alert data sources, and real-time analytics data sources.	✓
	External file import	Supports standard OBJ and .MTL 3D geometry file formats.	✓
		Allows direct import of vector graphics created with third-party graphic tools, supporting formats such as JPEG, PNG, MP3, MP4, SVG, and more.	✓
	Model library	System-built-in model library, including robot arms, motors, valves, tanks, pumps, pipes, HVAC, air conditioning, controllers, sensors, etc.	✓
	Symbol library	Supports creating new components using basic shapes such as lines, rectangles, triangles, circles, etc.	✓
	Chart library	Built-in common charts, like Echarts, tables and other charts	✓
	Model animation	Supports dynamic attributes of components that change and display based on data, such as liquid level changes, fluid flow, position movement, object rotation, etc.	✓
	View trajectory	Supports first-person movement perspective trajectory	✓
	Light control	Supports controllable lighting to enhance on-site realism	✓
	Graphics drawing	Supports HTML5 Canvas-based technology for graphic drawing; it supports the display of a virtual canvas, and zooming in or out will not cause distortion issues.	✓
Identity Recognition and Management ServicesSSO	User identity lifecycle management	Centralized management platform users, providing full lifecycle user management	✓
	Password security policy	Password strength requirements, regular change reminders, and encrypted storage ensure password security	✓
	User management	Create, verify, authorize, and manage the identity and access rights of applications	✓
	Single sign on	Provides single sign-on services, offering convenient access experiences and reducing redundant logins.	✓
	Third-party certification source integration	Supports seamless integration with third-party authentication systems that comply with OAuth 2.0 and OpenLDAP protocols, enabling users to log in with third-party accounts.	✓
	Two-factor authentication	Enhances user authentication security by combining two-factor authentication methods, such as passwords with email or SMS verification codes, or Google/Microsoft Authenticator.	✓
	Open API	Provides standardiz Restful APIs, for integration and interaction with other applications or services.	✓
System Management	Activate license	Supports downloading activation files, uploading license and viewing authorization license.	✓
	Tenant management	Includes adding, editing, deleting, and viewing tenants.	✓
	User permission management	Includes adding, editing, deleting, and viewing tenant users, as well as user permission management.	✓

List of Supported Southbound Collection Protocols

Protocol Name	Interface	Protocol Name	Interface
Modbus (RTU, TCP)	SERIAL & TCP/IP	CAN	Socket CAN
OPC-UA/OPC-DA	TCP/IP	GPIO	GPIO(Linux)
Siemens S7	TCP/IP	CSV	local, http server,ftp server, smb
SNMP	TCP/IP	Excel	local, http server,ftp server, smb
MQTT	TCP/IP	Profibus DP	SERIAL
HTTP (IoT Edge Protocol)	TCP/IP	Mitsubishi PLC (FX and Q Series)	TCP/IP
Kafka (IoT Edge Protocol)	TCP/IP	Beckhoff PLC	TCP/IP
UserDefined	SERIAL & TCP/IP	Omron PLC	TCP/IP, UDP
ODBC (MS SQL Server 2019, MySQL 8.0.29, PostgreSQL 10.5, Oracle 11g)	TCP/IP	DLT645-2007	SERIAL
WISE-2410	MQTT (via WISE-6610)	DNP3.0	TCP/IP
EVA-2210 / 2310 / 2311 / 2510	MQTT (via WISE-6610)	SNMPTrap	UDP
http-driver	TCP/IP	BacNet	UDP
BLE v4.0	BLE v4.0 (Linux)	IEC-104 (Telemetry, Teleindication, Telecontrol, Telesetting)	TCP/IP
Ethernet/IP	TCP/IP	IEC-61850	TCP/IP, MAC

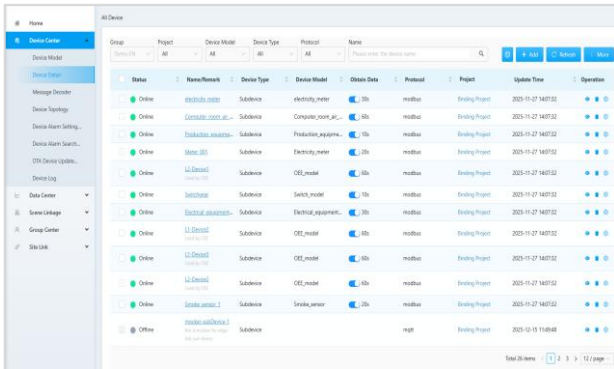
List of Supported Northbound Forwarding Protocols

Protocol Name	Forward To	Interface	Forward Format
MQTT	IoT Edge	TCP/IP	Northbound Forwarding
MQTT	WISE-SRP (IoTSuite/EHS/TPM/EMS/iMachine, etc.)	TCP/IP	Northbound Forwarding
MQTT	Third-party Platform (Custom JavaScript Message)	TCP/IP	Northbound Forwarding
InfluxDB	InfluxDB 1.8	TCP/IP	Northbound Forwarding
MongoDB	MongoDB	TCP/IP	Northbound Forwarding
SQL Server	MS SQL Server 2019	TCP/IP	Northbound Forwarding
Oracle	Oracle 11g	TCP/IP	Northbound Forwarding
MySQL	MySQL 5.0	TCP/IP	Northbound Forwarding
Kafka	Kafka	TCP/IP	Northbound Forwarding
OPC-UA Server	TCP/IP	TCP/IP	Northbound Forwarding
IEC-104 Server	TCP/IP	TCP/IP	Northbound Forwarding
IEC-61850 Server	TCP/IP, MAC	TCP/IP, MAC	Northbound Forwarding

Software Interface Showcase

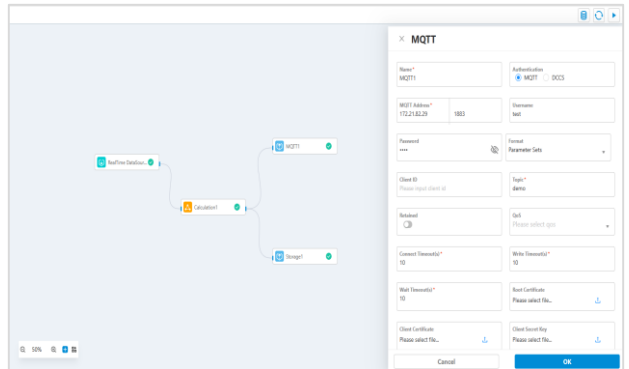
Device Management

Seamlessly connects to mainstream industrial protocols such as Modbus, OPC-UA, and S7, enabling compatibility with a wide range of end devices.



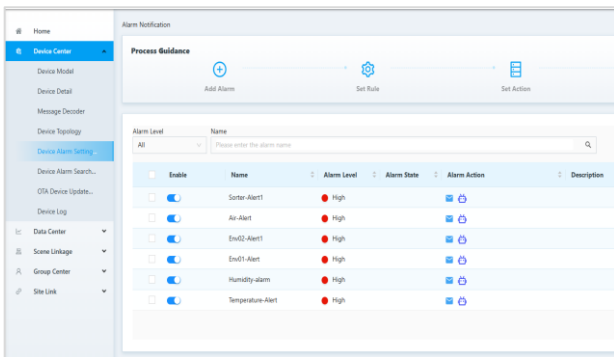
Data Forwarding

Supports multiple data forwarding methods, including MQTT for integration with third-party platforms, forwarding via OPC UA and IEC 104 protocols, and storage in designated database.



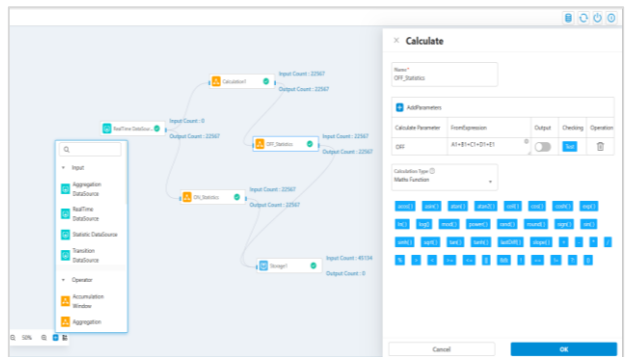
Device Alarm Setup and Management

Supports threshold-based device alarms that automatically trigger notifications upon abnormal values. Alarms support multi-channel alert delivery and maintain full audit logs for traceability and analysis.



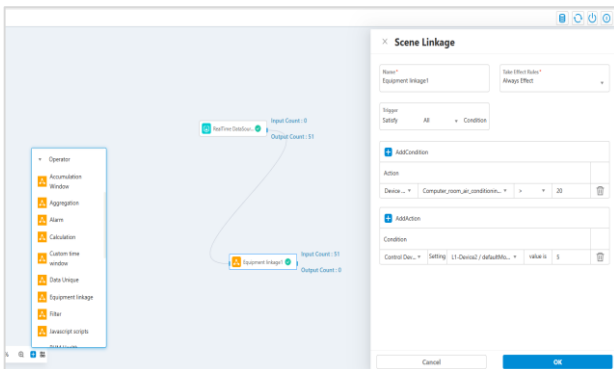
Real-Time Analytics

Offers rich operators (e.g., mathematical operations, aggregation, custom scripts) and flexible time window settings to enable intelligent data processing and analysis.



Event Correlation Control

Supports configurable linkage rules that trigger corresponding control actions when predefined conditions of collected data points are met.



Visualization Dashboard

Supports zero-code configuration, large-screen visualization, and immersive digital twin displays, empowering comprehensive data insights and decision-making in industrial environments.



Hardware Product Specifications

Product Image	MIC-770 V3 Product Specifications
<h1 data-bbox="87 547 439 602">MIC-770 V3</h1> <p data-bbox="107 654 451 745">Intel 12th/13th/14th Gen Core™ i CPU / Core Processors (2nd Generation) Bartlett Lake-S Platform (LGA 1700) Compact Fanless System</p> 	<ul data-bbox="548 540 1293 1135" style="list-style-type: none">• Socket compatibility for Intel 12th/13th/14th Gen Core™ i CPUs (LGA1700); based on Intel® R680E/H610E chipsets• Wide operating temperature range: -20°C to 60°C• Video outputs: VGA and HDMI• Dual Gigabit LAN ports• USB connectivity: 2 × USB 3.2 Gen2 and 6 × USB 3.2 Gen1• Serial ports: 2 × RS-232/422/485 and 4 × RS-232 (optional)• Storage options: 1 × 2.5" HDD/SSD, 1 × mSATA, and 1 × NVMe M.2• Power input: 9–36 VDC• IP40-rated protection against dust and water, suitable for harsh environments• Supports FlexIO and iDoor technologies for flexible expansion of additional interfaces such as HDMI, DisplayPort, DVI, COM ports, DIO, and remote I/O• Compatible with Advantech i-Modules• Supports Advantech SUSI-API and embedded software APIs• Features Intel vPro™/AMT and TPM security technologies• Supports Advantech iBMC 1.2 DeviceOn for out-of-band remote power management