# Ethernet I/O Modules: ADAM-6000/6200/6300

Introduction

Advantech's ADAM-6000/6200/6300 Ethernet I/O modules are easily integrated so they can remotely monitor and Cross-site Devices more flexibly.

Feature Highlights

Secure Cloud I/O

Innovative ADAM-6000/6200 Secure Cloud I/O offers device management, OTA updates, security and device monitoring functions in IoT era and help user easily manage widespread assets across diverse applications
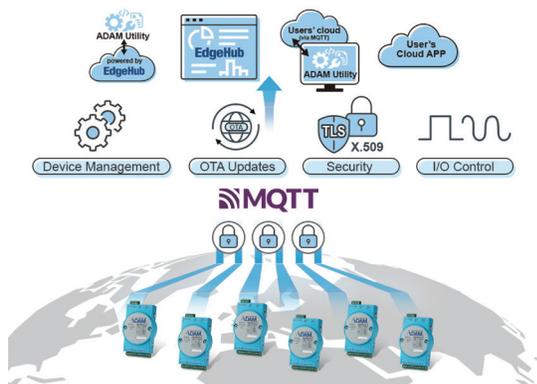
- **Device Management:** UUID, networking setting, I/O channel configuration
- **OTA Updates:** firmware, certificate and configuration mass deployment
- **Security:** TLS, X.509 certificate, cipher suites, IP allowlisting, protocol disabled
- **I/O Control:** digital I/O on/off, analog I/O read/write, I/O value periodically updated, alarm notificatio

Simple and Intuitive Logic Control

ADAM-6000/6200 Peer-to-Peer (P2P) and Graphic Condition Logic (GCL) modules can perform as standalone products for measurement, control, and automation.

Peer-to-Peer (P2P) connection

- Easy channel mapping from different I/O modules without extra programming effort or additional controllers.
- Utilizes Peer-to-Peer modules, just configure settings through ADAM.NET utility.
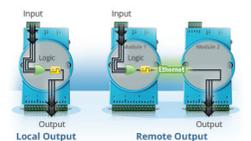
Graphic condition logic (GCL)

- GCL function is built-in ADAM-6000 and ADAM-6200 modules for users to easily set up logic rules in any application.
- User defined logic rules through graphical configuration environment in ADAM.NET utility.
- No additional controllers or programming is needed.

### Easy Deployment and Robust Communication

Flexible deployment with daisy chain networking and auto-bypass protection

ADAM-6200/6300 series supports daisy chain connectivity that offers flexible cabling and space saving capabilities. With Ethernet auto-bypass function supported to prevent accidental power failures if one of the modules unexpectedly shuts down.

Rich IoT Protocols

The ADAM-6000/6200 series supports multiple protocols for IoT applications: MQTT, SNMP, Restful APIs, and Modbus, which are very flexible and can be easily integrated with Microsoft Azure, Database, Network and SCADA systems.
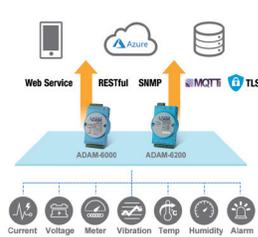
Cloud
- Support EdgeHub, Azure IoT Hub and any user's cloud.

MQTT
- Actively publish MQTT messages with user defined intervals.
- Shorten downtime with agile sequence of event ("ms" resolution) and alarm notification.

- Privacy assured with the TLS (Transport Layer Security).
- User defined topic and payload to integrate existing system.

SNMP
- Simple way to monitor I/O data on NMS (Network Management System).
- SNMP trap to notify alarm events.
- Reduces implementation cost with ADAM MIB (Management Information Base) file.

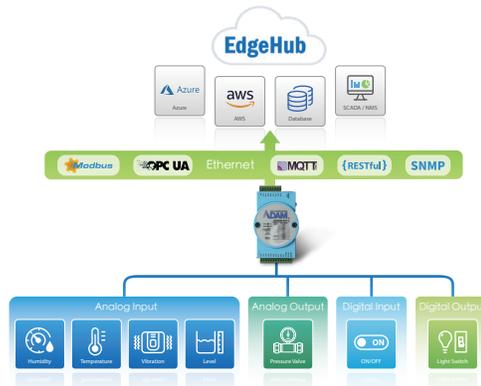### Industrial Grade with Isolation & Wide-operating Temperature

ADAM-6000/6200/6300 series has a rugged design.

- Supports isolation protection to avoid system damage from high-energy noise.
- Supports operating temperatures of between -40 ~70°C and can perform in most harsh environments.

Application Structure
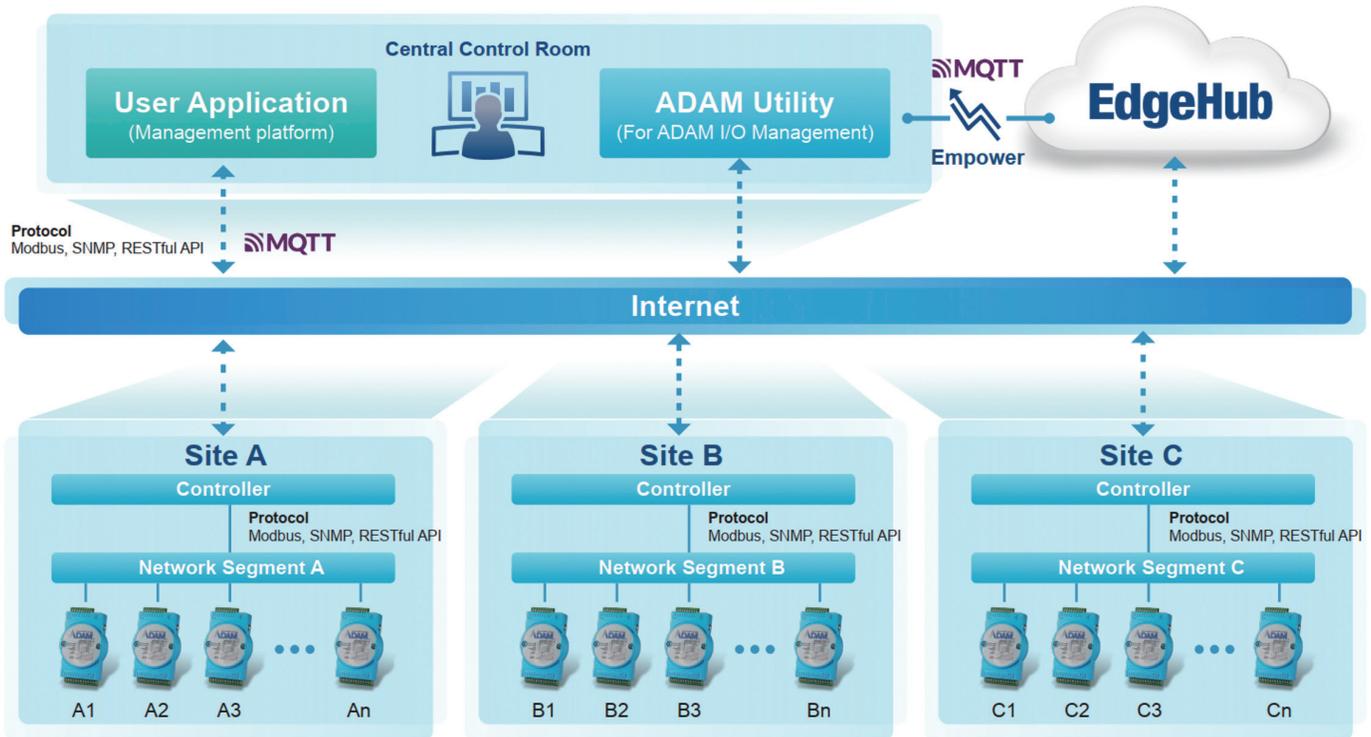

ADAM-6000/6200/6300 Series Comparison

Series Name		ADAM-6000 Series	ADAM-6200 Series	ADAM-6300 Series
Daisy-chain Connectivity		–	✓	✓
Protocol	MQTT	✓	✓	(By request)
	SNMP	✓	✓	(By request)
	Modbus	✓	✓	✓
	RESTful	✓	✓	(By request)
	OPC UA	–	–	✓
	Cloud I/O	✓	✓	(By request)

EdgeHub-enabled Cross-Site Device Management Solution

Direct I/O and Centralized Configuration

- EdgeHub enables device management with remote configuration, monitoring and maintenance capabilities for Advantech devices.
- Configure and maintain ADAM devices via ADAM Utility with built-in EdgeHub and web interface.
- Monitor and control I/O in real-time
- Manage user-defined configuration profiles and apply to devices
- Update device firmware remotely through secure OTA
- Manage multiple devices in groups with batch configuration and monitoring

Configurable Data Logging and Dashboard

- Flexible data logging and visualization with selectable tag configurations and customizable dashboard.
- Configure data logging by selecting I/O tags to store
- Customize web-based dashboard to view real-time and historical data

Multi-Tenant Architecture

- Support multiple organizations with isolated environments and resource management through tenant management.
- Tenant isolation – device, data storage, network traffic, API access
- Hierarchical tenant structures with parent-child relationships for enterprise deployments
- Tenant-specific user management and authentication
- Device connection quota management per tenant

Flexible Event Notification System

- User-defined event settings with real-time notification delivery through multiple communication channels.
- Define event rules based on device I/O tags
- Configure targeted notifications with customizable groups, users, and content
- Distribute alerts through email and other supported channels
- Track event history and acknowledgement status

Enterprise-Grade Access Control

- Secure access management with role-based control (RBAC) and user account
- Define role-based access control with customized permission sets
- Control user access right to devices configurations, monitoring and operations
- Manage user accounts with hierarchical roles and granular permissions

ADAM-6022
ADAM-6024

Ethernet-based Dual-loop PID Controller
12-ch Isolated Universal Input/Output Modbus TCP Module

ADAM-6022

ADAM-6024

Specifications

General

- **Loop Number**: 2 (3 AI, 1 AO, 1 DI, 1 DO for each control loop)

Analog Input

- **Channels**: 6 (differential)
- **Input Range**: ±10 V_{DC}, 0 ~ 20 mA, 4 ~ 20 mA

Analog Output

- **Channels**: 2
- **Output Type**: V, mA
- **Output Range**: 0 ~ 10 V_{DC}, 4 ~ 20 mA, 0 ~ 20 mA
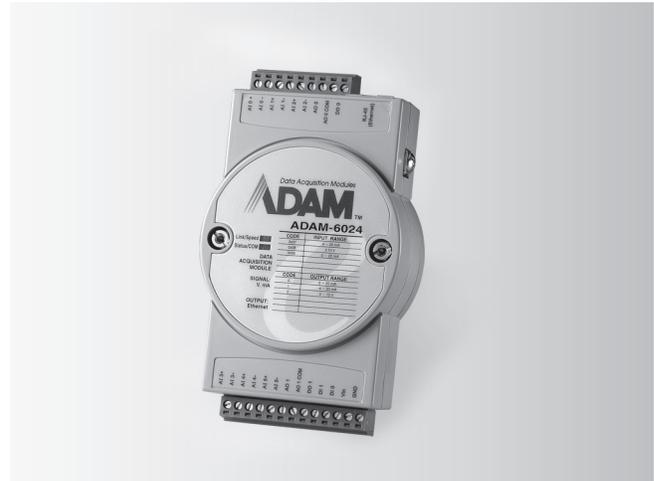
Digital Input

- **Channels**: 2
- **Dry Contact**: Logic level 0: close to GND
  Logic level 1: open
- **Wet Contact**: Logic level 0: 0 ~ 3 V_{DC}
  Logic level 1: 10 ~ 30 V_{DC}

Digital Output

- **Channels**: 2, open collector to 30 V, 100 mA max. load
- **Power Dissipation**: 300 mW for each module

Ordering Information

- **ADAM-6022**: Ethernet-based Dual-loop PID Controller

Specifications

Analog Input

- **Channels**: 6 (differential)
- **Input Range**: ±10 V_{DC}, 0 ~ 20 mA, 4 ~ 20 mA

Analog Output

- **Channels**: 2
- **Output Type**: V, mA
- **Output Range**: 0 ~ 10 V_{DC}, 4 ~ 20 mA, 0 ~ 20 mA

Digital Input

- **Channels**: 2
- **Dry Contact**: Logic level 0: close to GND
  Logic level 1: open
- **Wet Contact**: Logic level 0: 0 ~ 3 V_{DC}
  Logic level 1: 10 ~ 30 V_{DC}

Digital Output

- **Channels**: 2, open collector to 30 V, 100 mA max. load
- **Power Dissipation**: 300 mW for each module

Supports

- **Peer-to-Peer (Receiver only)**
- **GCL (Receiver only)**

Ordering Information

- **ADAM-6024**: 12-ch Isolated Universal I/O Modbus TCP Module

Common Specifications

General

- **Certification**: CE, FCC, UL
- **LAN**: 10/100Base-T(X)
- **Power Consumption**: 4 W @ 24 V_{DC}
- **Connectors**: 1 x RJ-45 (LAN), Plug-in screw terminal block (I/O and power)
- **Watchdog**: System (1.6 second) and Communication (programmable)
- **Power Input**: 10 ~ 30 V_{DC}
- **Supports Modbus/TCP, TCP/IP, UDP, RESTful (D version), MQTT (D version), SNMP (D version)**

Analog Input

- **Input Impedance**: 20 MΩ
- **Accuracy**: ±0.1% of FSR
- **Resolution**: 16-bit
- **Sampling Rate**: 10 sample/second
- **CMR @ 50/60 Hz**: 90 dB
- **NMR @ 50/60 Hz**: 60 dB
- **Span Drift**: ±25 ppm/° C
- **Zero Drift**: ±6 μV/° C

Analog Output

- **Accuracy**: ±0.1% of FSR
- **Resolution**: 12-bit
- **Drift**: ±50 ppm/° C
- **Current Load Resistor**: Max. 500Ω
- **Voltage Load Resistor**: Min. 1K Ω

Protection

- **Isolation Protection**: 2,000 V_{DC}
- **Built-in TVS/ESD Protection**
- **DI Over Voltage Protection**: 35 V_{DC}
- **Power Reversal Protection**

Environment

- **Operating Temperature**: -10 ~ 50° C (14 ~ 122° F)
  D version: -40 ~ 70° C (-40~158°F)
- **Storage Temperature**: -20 ~ 80° C (-4 ~ 176° F)
  D version: -40 ~ 80° C (-40~176° F)
- **Operating Humidity**: 20 ~ 95% RH (non-condensing)
- **Storage Humidity**: 0 ~ 95% RH (non-condensing)