

Ethernet I/O Modules

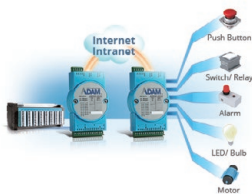
Introduction

Advantech's Ethernet I/O Modules, ADAM-6000 series are easily integrated through the latest Internet technology, so they can remotely monitor device status more flexibly.

Feature Highlights

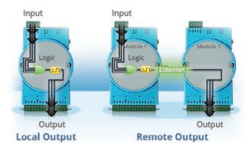
Simple and intuitive logic control

Advantech's 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.

Communication interface

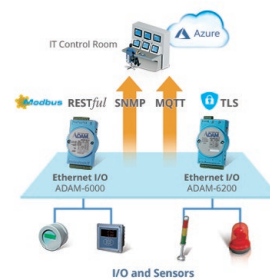


Flexible deployment with daisy chain networking and auto-bypass protection

ADAM-6200 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.

Communication with IoT protocols

The ADAM-6000/6200 series supports multiple protocols for IoT applications: MQTT, SNMP, Restful, Modbus, which are very flexible and can be easily integrated with Microsoft Azure, Database, Network and SCADA systems.



Cloud

- Supports Azure IoT Hub

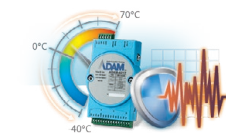
MQTT

- Actively publish MQTT message with user defined interval
- Shortens downtime with alarm event notification
- Privacy assured with the TLS (Transport Layer Security)
- User defined topic to integrate existing systems

SNMP

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

Industrial design / isolation & wide-operating temp.



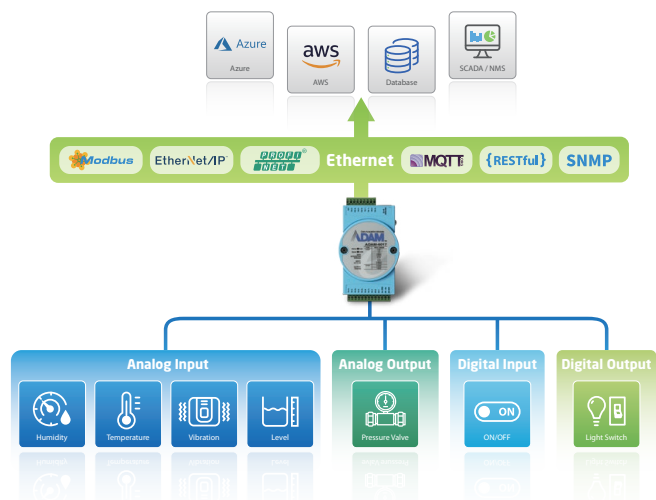
The ADAM-6000/6200 series has a rugged design.

- 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.

ADAM-6000/6100/6200 Series Comparison

| | ADAM-6000 Series | ADAM-6100 Series | ADAM-6200 Series | |
|--------------------------|------------------|------------------|---------------------|---|
| Daisy-chain Connectivity | - | ✓ | ✓ | |
| Protocols | MQTT | ✓ | ✓ | |
| | SNMP | ✓ | ✓ | |
| | Modbus | ✓ | ✓ | |
| | RESTful | ✓ | ✓ | |
| | PROFINET | - | ADAM-6100PN support | - |
| | Ethernet I/P | - | ADAM-6100EI support | - |

Application Structure



- 1 IoT Software Solutions
- 2 Edge AI and SKY Servers
- 3 Intelligent Systems
- 4 Machine Vision Solutions
- 5 Intelligent HMI and Monitors
- 6 Automation Computers
- 7 D4Q and Communication Gateways
- 8 Industrial Communication
- 9 Remote I/O, Wireless Sensing Modules and Converters
- 10 Intelligent Motion Control Solutions
- 11 EtherCAT Solutions and Automation Controllers
- 12 Industrial I/O Solutions
- 13 Intelligent Transportation Platforms
- 14 Utility and Energy Solutions

Ethernet I/O Modules



| Spec. | Model | ADAM-6015 | ADAM-6017 | ADAM-6018+ | ADAM-6022 | ADAM-6024 |
|---------------------------|-------------------------|--|---|------------------------------------|---|---|
| Interface | | 1x RJ-45 LAN port, 10/100 Mbps Ethernet | | | | |
| Peer-to-Peer ¹ | | | ✓ | | - | Receiver Only ² |
| GCL ¹ | | | ✓ | | - | Receiver Only ² |
| Resolution | | 16 bit | | | 16-bit for analog inputs 12-bit for analog outputs | 16-bit for analog inputs 12-bit for analog outputs |
| Analog Input | Channels | 7 | 8 | 8 | 6 | 6 |
| | Sampling Rate | 10 Hz | 10/100 Hz | 10 Hz | 10 Hz | 10 Hz |
| | Voltage Input | - | ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, 0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V | - | ±10 V | ±10 V |
| | Current Input | - | 0 ~ 20, 4 ~ 20, ±20 mA | - | 0 ~ 20, 4 ~ 20 mA | 0 ~ 20, 4 ~ 20 mA |
| | Direct Sensor Input | Pt, Balco, and Ni RTD | - | J, K, T, E, R, S, B thermocouple | - | - |
| | Burnout Detection | ✓ | ✓ (4 ~ 20mA only) | ✓ | - | - |
| | Math. Functions | Max. Min. Avg. | Max. Min. Avg. | Max. Min. Avg. | - | - |
| Analog Output | Channels | - | - | - | 2 | 2 |
| | Current Output | - | - | - | 0 ~ 20, 4 ~ 20 mA @ 15 V _{DC} | 0 ~ 20, 4 ~ 20 mA @ 15 V _{DC} |
| | Voltage Output | - | - | - | 0 ~ 10 V _{DC} @ 30 mA | 0 ~ 10 V _{DC} @ 30 mA |
| Digital I/O | Input Channels | - | - | - | 2 | 2 |
| | Output Channels | - | 2 (sink) | 8 (sink) | 2 (sink) | 2 (sink) |
| | High/Low Alarm Settings | ✓ | ✓ | ✓ | - | - |
| Isolation Protection | | 2,000 V _{DC} | | 2,000 V _{DC} ³ | 2,000 V _{DC} ³ | |
| Remark | | - | - | - | Built-in dual loop PID control algorithm | - |
| Protocols | | D version :Modbus TCP, RESTful, MQTT, SNMP,ASCII | | | Modbus TCP | D version: Modbus TCP,RESTful, MQTT, SNMP,ASCII |
| Certificate | | C1D2,UL,CE,FCC | C1D2,UL,CE,FCC | C1D2,UL,CE,FCC | CE,FCC | C1D2,UL,CE,FCC |



| Spec. | Model | ADAM-6050 | ADAM-6051 | ADAM-6052 | ADAM-6060 | ADAM-6066 |
|---------------------------|-------------------------|---|----------------|----------------|------------|------------------|
| Interface | | 1x RJ-45 LAN port, 10/100 Mbps Ethernet | | | | |
| Peer-to-Peer ¹ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| GCL ¹ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Digital I/O | Input Channels | 12 | 12 | 8 | 6 | 6 |
| | Output Channels | 6 (sink) | 2 (sink) | 8 (source) | 6-ch relay | 6-ch power relay |
| | Extra Counter Channels | - | 2 | - | - | - |
| | Counter Input | 3 kHz | 4.5 kHz | 3 kHz | 3 kHz | 3 kHz |
| | Frequency Input | 3 kHz | 4.5 kHz | 3 kHz | 3 kHz | 3 kHz |
| | Pulse Output | ✓ | ✓ | ✓ | ✓ | ✓ |
| | High/Low Alarm Settings | - | - | - | - | - |
| Isolation Protection | | 2,000 V _{DC} | | | | |
| Protocols | | D version: Modbus TCP,RESTful, MQTT, SNMP,ASCII | | | | |
| Certificate | | C1D2,UL,CE,FCC | C1D2,UL,CE,FCC | C1D2,UL,CE,FCC | UL,CE,FCC | UL,CE,FCC |

Ethernet I/O Modules



| Model | | ADAM-6217 | ADAM-6224 | ADAM-6250 | ADAM-6251 | ADAM-6256 | ADAM-6260 | ADAM-6266 |
|---------------------------|-------------------|---|-----------------------------|--|-------------------|--------------------|---|------------------------------|
| Interface | | 2x RJ-45 LAN port (Daisy-chain), 10/100 Mbps Ethernet | | | | | | |
| Peer-to-Peer ¹ | | ✓ | Receiver Only ² | ✓ | ✓ | ✓ | ✓ | ✓ |
| GCL ¹ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Analog Input | Channels | 8 | - | - | - | - | - | - |
| | Input Impedance | >10MΩ (voltage) 120Ω (current) | - | - | - | - | - | - |
| | Voltage Input | ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V | - | - | - | - | - | - |
| | Current Input | 0 ~ 20, 4 ~ 20, ±20 mA | - | - | - | - | - | - |
| | Sampling Rate | 10 Hz | - | - | - | - | - | - |
| | Burnout Detection | ✓ (4 ~ 20 mA) | - | - | - | - | - | - |
| | Resolution | 16-bit | - | - | - | - | - | - |
| Analog Output | Channels | - | 4 | - | - | - | - | - |
| | Voltage Output | - | 0 ~ 5, 0 ~ 10, ±5, ±10 V | - | - | - | - | - |
| | Current Output | - | 0 ~ 20, 4 ~ 20 mA | - | - | - | - | - |
| | Resolution | - | 12-bit | - | - | - | - | - |
| Digital I/O | Input Channels | - | 4 (dry contact only) | 8 | 16 | - | - | 4 |
| | Output Channels | - | - | 7 (sink) | - | 16 (sink) | - | - |
| | Relay Output | - | - | - | - | - | 6 (5 Form C + 1 Form A) | 4 (Form C) |
| | Contact Rating | - | - | - | - | - | 250 V _{AC} @ 5A 30 V _{DC} @ 5A | |
| | Counter Input | - | - | 3 kHz | 3 kHz | - | - | 3 kHz |
| | Frequency Input | - | - | 3 kHz | 3 kHz | - | - | 3 kHz |
| | Pulse Output | - | - | 5 kHz | - | 5 kHz | 5 kHz | 5 kHz |
| | LED Indicator | - | - | 8 digital outputs, 7 digital inputs | 16 digital inputs | 16 digital outputs | 6 relay | 4 digital inputs, 4 relay |
| Power Consumption | | 3.5 W | 6 W | 3 W | 2.7 W | 3.2 W | 4.5 W | 4.2 W |
| Isolation Voltage | | 2,500 V _{DC} | | | | | | |
| Watchdog Timer | | System (1.6 s) Communication (programmable) | | | | | | |
| Communication Protocol | | Modbus TCP, RESTful, MQTT, SNMP, ASCII | | | | | | |
| Power Requirements | | 10 ~ 30 V _{DC} (24 V _{DC} standard) | | | | | | |
| Operating Temperature | | -40 ~ 70°C (-40 ~ 158°F) | | | | | | |
| Storage Temperature | | -40 ~ 85°C (-40 ~ 185°F) | | | | | | |
| Operating Humidity | | 20 ~ 95% RH (non-condensing) | | | | | | |
| Storage Humidity | | 0 ~ 95% RH (non-condensing) | | | | | | |
| Certification | | CE, FCC | CE, FCC | CE, FCC | CE, FCC | CE, FCC | CE, FCC | CE, FCC |

Note 1: Peer-to-peer and GCL cannot be run simultaneously; only one feature can be enabled at a time.

Note 2: The ADAM-6224 can only act as a receiver and generate analog output when peer-to-peer or GCL mode is used.

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Ethernet I/O Modules



| Model | | ADAM-6117 | ADAM-6150 | ADAM-6151 | ADAM-6156 | ADAM-6160 |
|----------------------|---------------------|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Interface | | 10/100 Mbps Ethernet | | | | |
| Support Protocol | | ADAM-6100EI: EtherNet/IP ADAM-6100PN: Profinet | | | | |
| Analog Input | Resolution | 16-bit | - | - | - | - |
| | Channels | 8 | - | - | - | - |
| | Sampling Rate | 10 Hz | - | - | - | - |
| | Voltage Input | ±150 mV ±500 mV ±1 V ±5 V ±10 V | - | - | - | - |
| | Current Input | 0 ~ 20, 4 ~ 20, ±20 mA | - | - | - | - |
| | Direct Sensor Input | - | - | - | - | - |
| Analog Output | Resolution | - | - | - | - | - |
| | Channels | - | - | - | - | - |
| | Current Output | - | - | - | - | - |
| | Voltage Output | - | - | - | - | - |
| Digital I/O | Input Channels | - | 8 | 16 | - | - |
| | Output Channels | - | 7 | - | 16 | 6-ch power relay |
| Isolation Protection | | 2,500 V _{DC} | 2,500 V _{DC} | 2,500 V _{DC} | 2,500 V _{DC} | 2,500 V _{DC} |
| Connectors | | 2 x RJ-45 LAN (daisy chain) Plug-in screw terminal block (I/O and power) | | | | |
| Certification | | CE,FCC | CE,FCC | CE,FCC | CE,FCC | CE,FCC |