

ioLogik E1200 Series

Ethernet remote I/O with 2-port Ethernet switch



Features and Benefits

- User-definable Modbus TCP Slave addressing
- Supports RESTful API for IIoT applications
- Supports EtherNet/IP Adapter
- 2-port Ethernet switch for daisy-chain topologies
- Saves time and wiring costs with peer-to-peer communications
- Active communication with MX-AOPC UA Server
- Supports SNMP v1/v2c
- Easy mass deployment and configuration with ioSearch utility
- Friendly configuration via web browser
- Simplifies I/O management with MXIO library for Windows or Linux
- Class I Division 2, ATEX Zone 2 certification¹
- Wide operating temperature models available for -40 to 75°C (-40 to 167°F) environments

Certifications



Introduction

The ioLogik E1200 Series supports the most often-used protocols for retrieving I/O data, making it capable of handling a wide variety of applications. Most IT engineers use SNMP or RESTful API protocols, but OT engineers are more familiar with OT-based protocols, such as Modbus and EtherNet/IP. Moxa's Smart I/O makes it possible for both IT and OT engineers to conveniently retrieve data from the same I/O device. The ioLogik E1200 Series speaks six different protocols, including Modbus TCP, EtherNet/IP, and Moxa AOPC for OT engineers, as well as SNMP, RESTful API, and Moxa MXIO library for IT engineers. The ioLogik E1200 retrieves I/O data and converts the data to any of these protocols at the same time, allowing you to get your applications connected easily and effortlessly.

Daisy-Chain Ethernet I/O Connection

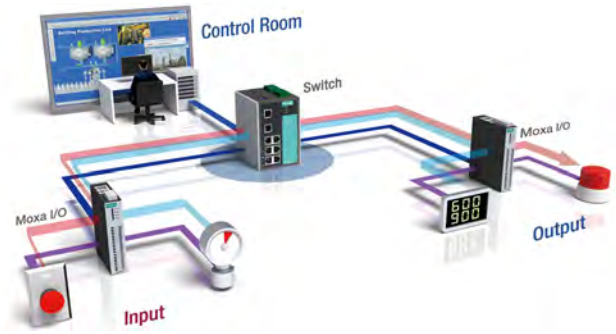
This industrial Ethernet remote I/O comes with two switched Ethernet ports to allow for the free flow of information downstream to another local Ethernet device, or upstream to a control server via expandable daisy-chained Ethernet I/O arrays. Applications such as factory automation, security and surveillance systems, and tunneled connections can make use of daisy-chained Ethernet for building multidrop I/O networks over standard Ethernet cables. Many industrial automation users are familiar with multidrop as the configuration most typically used in fieldbus solutions. The daisy-chain capabilities supported by ioLogik Ethernet remote I/O units not only increase the expandability and installation possibilities for your remote I/O applications, but also lower overall costs by reducing the need for separate Ethernet switches. Daisy-chaining devices in this way will also reduce overall labor and cabling expenses.



1. Class I Division 2 and ATEX currently do not apply to the E1213/E1213-T models.

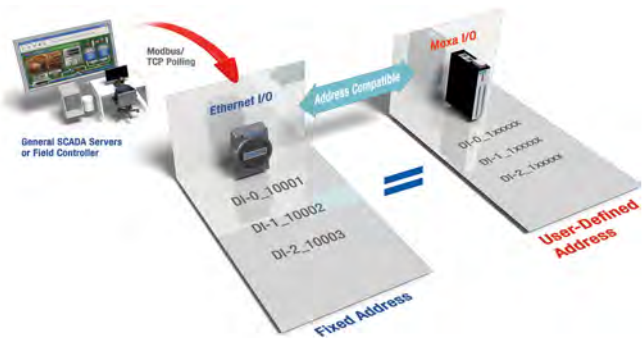
Save Time and Wiring Costs with Peer-to-Peer Communications

In remote automation applications, the control room and sensors are often far removed, making wiring over long distances a constant challenge. With peer-to-peer networking, users may now map a pair of ioLogik Series modules so that input values will be directly transferred to output channels, greatly simplifying the wiring process and reducing wiring costs.



User-Definable Modbus TCP Addressing for Painless Upgrading of Existing Systems

For Modbus devices that are controlled and detected by fixed addresses, users need to spend a vast amount of time researching and verifying initial configurations. Users need to locate each device's networking details, such as I/O channels or vendor-defined addresses, to enable the initial or start address of a SCADA system or PLC. Devices that support user-definable Modbus TCP addressing offer greater flexibility and easier setup. Instead of worrying about individual devices, users simply configure the function and address map to fit their needs.



Push Technology for Events

When used with MX-AOPC UA Server, devices can use active push communications when communicating changes in state and/or events to a SCADA system. Unlike a polling system, when using a push architecture for communications with a SCADA system, messages will only be delivered when changes in state or configured events occur, resulting in higher accuracy and lower amounts of data that need to be transferred.



Specifications

Input/Output Interface

| | |
|---------------------------------------|---|
| Digital Input Channels | ioLogik E1210 Series: 16 ioLogik E1212/E1213 Series: 8 ioLogik E1214 Series: 6 ioLogik E1242 Series: 4 |
| Digital Output Channels | ioLogik E1211 Series: 16 ioLogik E1213 Series: 4 |
| Configurable DIO Channels (by jumper) | ioLogik E1212 Series: 8 ioLogik E1213/E1242 Series: 4 |
| Relay Channels | ioLogik E1214 Series: 6 |
| Analog Input Channels | ioLogik E1240 Series: 8 ioLogik E1242 Series: 4 |
| Analog Output Channels | ioLogik E1241 Series: 4 |
| RTD Channels | ioLogik E1260 Series: 6 |

| | |
|-----------------------|-------------------------|
| Thermocouple Channels | ioLogik E1262 Series: 8 |
| Isolation | 3k VDC or 2k Vrms |
| Buttons | Reset button |

Digital Inputs

| | |
|---------------------------------|---|
| Connector | Screw-fastened Euroblock terminal |
| Sensor Type | Dry contact Wet contact (NPN or PNP) |
| I/O Mode | DI or event counter |
| Dry Contact | On: short to GND Off: open |
| Wet Contact (DI to COM) | On: 10 to 30 VDC Off: 0 to 3 VDC |
| Counter Frequency | 250 Hz |
| Digital Filtering Time Interval | Software configurable |
| Points per COM | ioLogik E1210/E1212 Series: 8 channels ioLogik E1213 Series: 12 channels ioLogik E1214 Series: 6 channels ioLogik E1242 Series: 4 channels |

Digital Outputs

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|---------------------------|--|
| Connector | Screw-fastened Euroblock terminal |
| I/O Type | ioLogik E1211/E1212/E1242 Series: Sink ioLogik E1213 Series: Source |
| I/O Mode | DO or pulse output |
| Current Rating | ioLogik E1211/E1212/E1242 Series: 200 mA per channel ioLogik E1213 Series: 500 mA per channel |
| Pulse Output Frequency | 500 Hz (max.) |
| Over-Current Protection | ioLogik E1211/E1212/E1242 Series: 2.6 A per channel @ 25°C ioLogik E1213 Series: 1.5 A per channel @ 25°C |
| Over-Temperature Shutdown | 175°C (typical), 150°C (min.) |
| Over-Voltage Protection | 35 VDC |

Relays

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|------------------------|--|
| Connector | Screw-fastened Euroblock terminal |
| Type | Form A (N.O.) power relay |
| I/O Mode | Relay or pulse output |
| Pulse Output Frequency | 0.3 Hz at rated load (max.) |
| Contact Current Rating | Resistive load: 5 A @ 30 VDC, 250 VAC, 110 VAC |
| Contact Resistance | 100 milli-ohms (max.) |
| Mechanical Endurance | 5,000,000 operations |
| Electrical Endurance | 100,000 operations @ 5 A resistive load |

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| Breakdown Voltage | 500 VAC |
| Initial Insulation Resistance | 1,000 mega-ohms (min.) @ 500 VDC |
| Note | Ambient humidity must be non-condensing and remain between 5 and 95%. The relays may malfunction when operating in high condensation environments below 0°C. |

Analog Inputs

| | |
|-------------------------------------|--|
| Connector | Screw-fastened Euroblock terminal |
| I/O Mode | Voltage/Current |
| I/O Type | Differential |
| Resolution | 16 bits |
| Input Range | 0 to 10 VDC 0 to 20 mA 4 to 20 mA 4 to 20 mA (with burn-out detection) |
| Accuracy | ioLogik E1240/E1242: ±0.1% FSR @ 25°C ±0.3% FSR @ -10 to 60°C ioLogik E1240-T/E1242-T: ±0.1% FSR @ 25°C ±0.3% FSR @ -10 to 60°C ±0.5% FSR @ -40 to 75°C |
| Sampling Rate | ioLogik E1240: 12 samples/sec per module (shared between up to 8 channels) ² ioLogik E1242: 12 samples/sec per module (shared between up to 4 channels) ² |
| Built-in Resistor for Current Input | 120 ohms |
| Input Impedance | 10 mega-ohms (min.) |

Analog Outputs

| | |
|---|--|
| Connector | Screw-fastened Euroblock terminal |
| I/O Mode | Voltage/Current |
| Output Range | 0 to 10 VDC 0 to 20 mA 4 to 20 mA |
| Resolution | 12-bit |
| Accuracy | ioLogik E1241: ±0.1% FSR @ 25°C ±0.3% FSR @ -10 to 60°C ioLogik E1241-T: ±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C |
| Load (Current Mode) | Internal power: 400 ohms (max.) 24 V external power: 1000 ohms (max.) |
| Voltage Output Short-Circuit Protection | 10 mA |

RTDs

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|-------------|-----------------------------------|
| Connector | Screw-fastened Euroblock terminal |
| Sensor Type | PT1000 (-200 to 350°C) |

2. If N channels are enabled, the sampling rate for each enabled channel = 12/N samples/sec.

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| | PT50, PT100, PT200, PT500 (-200 to 850°C) |
| Resistance Type | 310, 620, 1250, and 2200 ohms |
| Input Connection | 2- or 3-wire |
| Sampling Rate | ioLogik E1260: 12 samples/sec per module (shared between up to 6 channels) ³ |
| Resolution | 0.1°C or 0.1 ohms |
| Accuracy | ioLogik E1260: ±0.1% FSR @ 25°C ±0.3% FSR @ -10 to 60°C ioLogik E1260-T: ±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C |
| Input Impedance | 625 kilo-ohms (min.) |

Thermocouples

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|--------------------|--|
| Connector | Screw-fastened Euroblock terminal |
| Sensor Type | J, K, T, E, R, S, B, N |
| Millivolt Type | ±19.532 mV ±39.062 mV ±78.126 mV Fault and over-voltage protection: -35 to +35 VDC (power off); -25 to +30 VDC (power on) |
| Resolution | 16 bits |
| Millivolt Accuracy | ioLogik E1262: ±0.1% FSR @ 25°C ±0.3% FSR @ -10 to 60°C ioLogik E1262-T: ±0.1% FSR @ 25°C ±0.3% FSR @ -40 to 75°C |
| TC Accuracy | Types J, T, E, S, B: ±5°C Types K, R, N: ±8°C |
| CJC Accuracy | ±0.5°C @ 25°C ±1.5°C @ -40 to 75°C |
| Sampling Rate | ioLogik E1262: 12 samples/sec per module (shared between up to 8 channels) ³ |
| Input Impedance | 10 mega-ohms (min.) |

Ethernet Interface

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|---------------------------------------|------------------------------------|
| 10/100BaseT(X) Ports (RJ45 connector) | 2, 1 MAC address (Ethernet bypass) |
| Magnetic Isolation Protection | 1.5 kV (built-in) |

Ethernet Software Features

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|-----------------------|--|
| Configuration Options | Web Console (HTTP), Windows Utility (ioSearch), MCC Tool |
| Industrial Protocols | Modbus TCP Server (Slave), Moxa AOPC (Active Tag), MXIO Library, EtherNet/IP Adapter |
| Management | RESTful API, SNMPv1/v2c, SNMPv1 Trap, HTTP, DHCP Client, BOOTP, IPv4, TCP/IP, UDP |

3. If N channels are enabled, the sampling rate for each enabled channel = 12/N samples/sec.

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|--|--|
| MIB | Device Settings MIB |
| Security | Access control list |
| Security Functions | |
| Authentication | Local database |
| LED Interface | |
| LED Indicators | Power, Ready, Port 1, Port 2 |
| Modbus TCP | |
| Functions Supported | 1, 2, 3, 4, 5, 6, 15, 16, 23 |
| Mode | Server (Slave) |
| Max. No. of Client Connections | 10 |
| EtherNet/IP | |
| Mode | Adapter |
| Max. No. of Scanner Connections | 9 (for read-only), 1 (for read/write) |
| Power Parameters | |
| Power Connector | Screw-fastened Euroblock terminal |
| No. of Power Inputs | 1 |
| Input Voltage | 12 to 36 VDC |
| Power Consumption | ioLogik E1210 Series: 110 mA @ 24 VDC ioLogik E1211 Series: 200 mA @ 24 VDC ioLogik E1212 Series: 155 mA @ 24 VDC ioLogik E1213 Series: 130 mA @ 24 VDC ioLogik E1214 Series: 188 mA @ 24 VDC ioLogik E1240 Series: 121 mA @ 24 VDC ioLogik E1241 Series: 194 mA @ 24 VDC ioLogik E1242 Series: 139 mA @ 24 VDC ioLogik E1260 Series: 110 mA @ 24 VDC ioLogik E1262 Series: 118 mA @ 24 VDC |
| Physical Characteristics | |
| Housing | Plastic |
| Dimensions | 27.8 x 124 x 84 mm (1.09 x 4.88 x 3.31 in) |
| Weight | 200 g (0.44 lb) |
| Installation | DIN-rail mounting, Wall mounting |
| Wiring | I/O cable, 16 to 26 AWG Power cable, 12 to 24 AWG |
| Environmental Limits | |
| Operating Temperature | Standard Models: -10 to 60°C (14 to 140°F) Wide Temp. Models: -40 to 75°C (-40 to 167°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F) |
| Ambient Relative Humidity | 5 to 95% (non-condensing) |
| Altitude | 4000 m ⁴ |

4. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

Standards and Certifications

| | |
|---------------------|--|
| EMC | EN 55032/24, EN 61000-6-2/-6-4 |
| EMI | CISPR 32, FCC Part 15B Class A |
| EMS | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF |
| Hazardous Locations | ATEX, Class I Division 2 ⁵ |
| Safety | UL 508 |
| Shock | IEC 60068-2-27 |
| Freefall | IEC 60068-2-32 |
| Vibration | IEC 60068-2-6 |

Declaration

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|---------------|-------------------|
| Green Product | RoHS, CRoHS, WEEE |
|---------------|-------------------|

MTBF

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|-----------|--|
| Time | ioLogik E1210 Series: 671,345 hrs ioLogik E1211 Series: 923,027 hrs ioLogik E1212 Series: 561,930 hrs ioLogik E1213 Series: 715,256 hrs ioLogik E1214 Series: 808,744 hrs ioLogik E1240 Series: 474,053 hrs ioLogik E1241 Series: 888,656 hrs ioLogik E1242 Series: 502,210 hrs ioLogik E1260 Series: 660,260 hrs ioLogik E1262 Series: 631,418 hrs |
| Standards | Telcordia SR332 |

Warranty

| | |
|-----------------|---|
| Warranty Period | ioLogik E1214: 2 years ⁶ ioLogik E1210/E1211/E1212/E1213/E1240/E1241/E1242/E1260/E1262: 5 years |
| Details | See www.moxa.com/warranty |

Package Contents

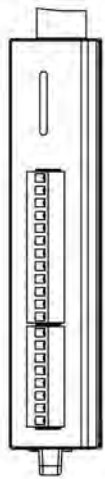
| | |
|------------------|---|
| Device | 1 x ioLogik E1200 Series remote I/O |
| Installation Kit | 1 x terminal block, 8-pin, 3.81 mm 1 x terminal block, 12-pin, 3.81 mm 1 x terminal block, 3-pin, 5.00 mm |
| Documentation | 1 x quick installation guide 1 x warranty card |

5. ATEX and Class I Division 2 currently do not apply to the ioLogik E1213/E1213-T models.

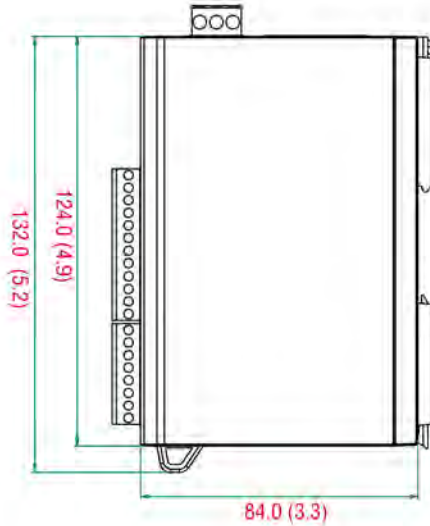
6. Because of the limited lifetime of power relays, products that use this component are covered by a 2-year warranty.

Dimensions

Unit: mm (inch)



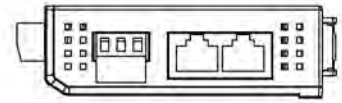
Front View



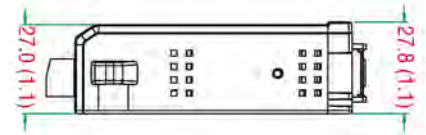
Side View



Rear View



Top View



Bottom View

Ordering Information

| Model Name | Input/Output Interface | Digital Output Type | Operating Temp. |
|-----------------|-------------------------|---------------------|-----------------|
| ioLogik E1210 | 16 x DI | – | -10 to 60°C |
| ioLogik E1210-T | 16 x DI | – | -40 to 75°C |
| ioLogik E1211 | 16 x DO | Sink | -10 to 60°C |
| ioLogik E1211-T | 16 x DO | Sink | -40 to 75°C |
| ioLogik E1212 | 8 x DI, 8 x DIO | Sink | -10 to 60°C |
| ioLogik E1212-T | 8 x DI, 8 x DIO | Sink | -40 to 75°C |
| ioLogik E1213 | 8 x DI, 4 x DO, 4 x DIO | Source | -10 to 60°C |
| ioLogik E1213-T | 8 x DI, 4 x DO, 4 x DIO | Source | -40 to 75°C |
| ioLogik E1214 | 6 x DI, 6 x Relay | – | -10 to 60°C |
| ioLogik E1214-T | 6 x DI, 6 x Relay | – | -40 to 75°C |
| ioLogik E1240 | 8 x AI | – | -10 to 60°C |
| ioLogik E1240-T | 8 x AI | – | -40 to 75°C |
| ioLogik E1241 | 4 x AO | – | -10 to 60°C |
| ioLogik E1241-T | 4 x AO | – | -40 to 75°C |
| ioLogik E1242 | 4 DI, 4 x DIO, 4 x AI | Sink | -10 to 60°C |
| ioLogik E1242-T | 4 DI, 4 x DIO, 4 x AI | Sink | -40 to 75°C |
| ioLogik E1260 | 6 x RTD | – | -10 to 60°C |
| ioLogik E1260-T | 6 x RTD | – | -40 to 75°C |
| ioLogik E1262 | 8 x TC | – | -10 to 60°C |
| ioLogik E1262-T | 8 x TC | – | -40 to 75°C |

Accessories (sold separately)

Software

MX-AOPC UA Server

OPC UA Server software for converting fieldbus to the OPC UA standard

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