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 certification[1]
- 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.

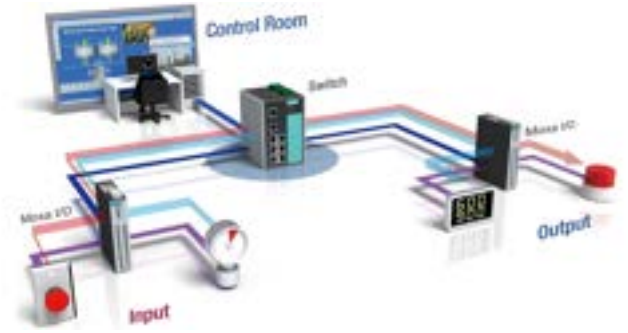
Daisy-Chained Ethernet I/O Connection

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.

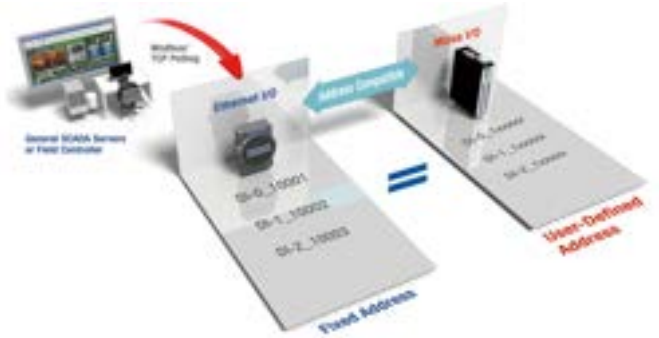
Save Time and Wiring Costs with Peer-to-Peer Communications

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

Thermocouple Channels	ioLogik E1262 models: 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)	ioLogik E1210/E1212/E1213/E1214/E1242 models: 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 models: 8 channels ioLogik E1213 models: 12 channels ioLogik E1214 models: 6 channels ioLogik E1242 models: 4 channels

Digital Outputs

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

Relays

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	ioLogik E1214/E1214-T models: Resistive load: 5A @ 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
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

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

RTDs

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

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

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

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

Ethernet Software Features

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
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 models: 110 mA @ 24 VDC ioLogik E1211 models: 200 mA @ 24 VDC ioLogik E1212 models: 155 mA @ 24 VDC ioLogik E1213 models: 130 mA @ 24 VDC ioLogik E1214 models: 188 mA @ 24 VDC ioLogik E1240 models: 121 mA @ 24 VDC ioLogik E1241 models: 194 mA @ 24 VDC ioLogik E1242 models: 139 mA @ 24 VDC ioLogik E1260 models: 110 mA @ 24 VDC ioLogik E1262 models: 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]

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

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	ioLogik E1210 models: 671,345 hrs ioLogik E1211 models: 923,027 hrs ioLogik E1212 models: 561,930 hrs ioLogik E1213 models: 715,256 hrs ioLogik E1214 models: 808,744 hrs ioLogik E1240 models: 474,053 hrs ioLogik E1241 models: 888,656 hrs ioLogik E1242 models: 502,210 hrs ioLogik E1260 models: 660,260 hrs ioLogik E1262 models: 631,418 hrs
Standards	Telcordia Standard SR-332

4. Please contact Moxa if you require products guaranteed to function properly at higher altitudes.
5. ATEX and Class I Division 2 currently do not apply to the ioLogik E1213/E1213-T models.

Warranty

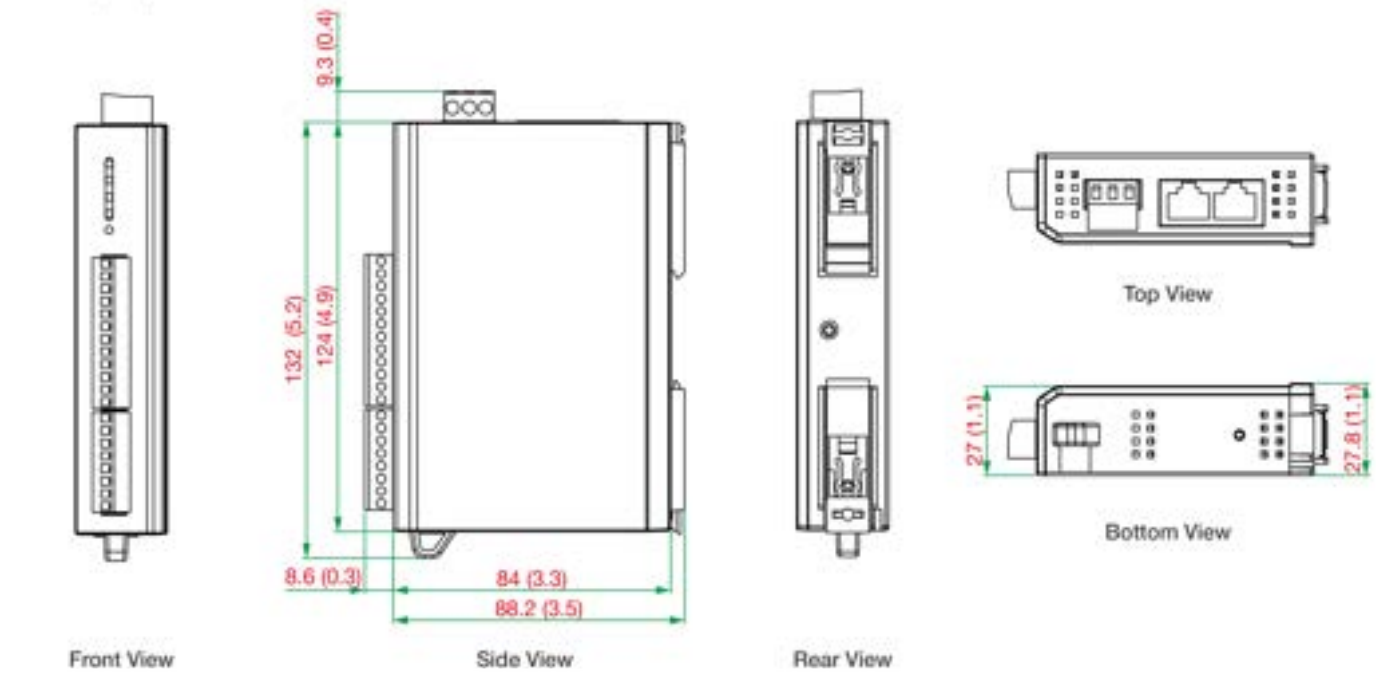
Warranty Period	ioLogik E1214: 2 years[6] ioLogik E1210/E1211/E1212/E1213/E1240/E1241/E1242/E1260/E1262: 5 years
Details	See www.moxa.com/warranty

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

Dimensions

Unit: mm (inch)



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

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

Model Name	Input/Output Interface	Digital Output Type	Operating Temp.
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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