Industrial I/O

5

Industrial I/O

Stand-alone Type I/Os






Model	ioLogik W5340	ioLogik E2210	ioLogik E2212	ioLogik E2214	ioLogik E2240	ioLogik E2242
Category	Cellular GPRS I/O	Active Ethernet I/O	Active Ethernet I/O	Active Ethernet I/O	Active Ethernet I/O	Active Ethernet I/O
Comm. Interface	GPRS, 10/100M Ethernet	10/100M Ethernet	10/100M Ethernet	10/100M Ethernet	10/100M Ethernet	10/100M Ethernet
I/O Combination	4 AIs, 8 DIOs, 2 Relays	12 DIs, 8 DOs	8 DIs, 8 DOs, 4 DIOs	6 DIs, 6 Relays	8 AIs, 2 AOs	4 AIs, 12 DIOs
Control Protocol	Modbus/TCP, SNMP, OPC	Modbus/TCP, SNMP, OPC, Http-CGI	Modbus/TCP, SNMP, OPC, Http-CGI	Modbus/TCP, SNMP, OPC, Http-CGI	Modbus/TCP, SNMP, OPC, Http-CGI	Modbus/TCP, SNMP, OPC, Http-CGI
Local Intelligence	Click&Go	Click&Go	Click&Go	Click&Go	Click&Go	Click&Go
Alarm Function	SMS, E-mail, SNMP Traps, TCP/UDP Messaging	E-mail, SNMP Traps, TCP/UDP Messaging	E-mail, SNMP Traps, TCP/UDP Messaging	E-mail, SNMP Traps, TCP/UDP Messaging	E-mail, SNMP Traps, TCP/UDP Messaging	E-mail, SNMP Traps, TCP/UDP Messaging





Model	ioLogik E2260	ioLogik E2262	ioLogik R2110	ioLogik R2140	ioMirror E3210
Category	Active Ethernet I/O	Active Ethernet I/O	RS-485 I/O	RS-485 I/O	Peer-to-Peer I/O
Comm. Interface	10/100M Ethernet	10/100M Ethernet	RS-485	RS-485	10/100M Ethernet
I/O Combination	4 DOs, 6 RTDs	4 DOs, 8 TCs	12 DIs, 8 DOs	8 AIs, 2 AOs	8 DIs, 8 DOs
Control. Protocol	Modbus/TCP, SNMP, OPC, Http-CGI	Modbus/TCP, SNMP, OPC, Http-CGI	Modbus/RTU	Modbus/RTU	---
Local Intelligence	Click&Go	Click&Go	---	---	---
Alarm Function	E-mail, SNMP Traps, TCP/UDP Messaging	E-mail, SNMP Traps, TCP/UDP Messaging	---	---	Alarm Channel with LED for Conn. Status

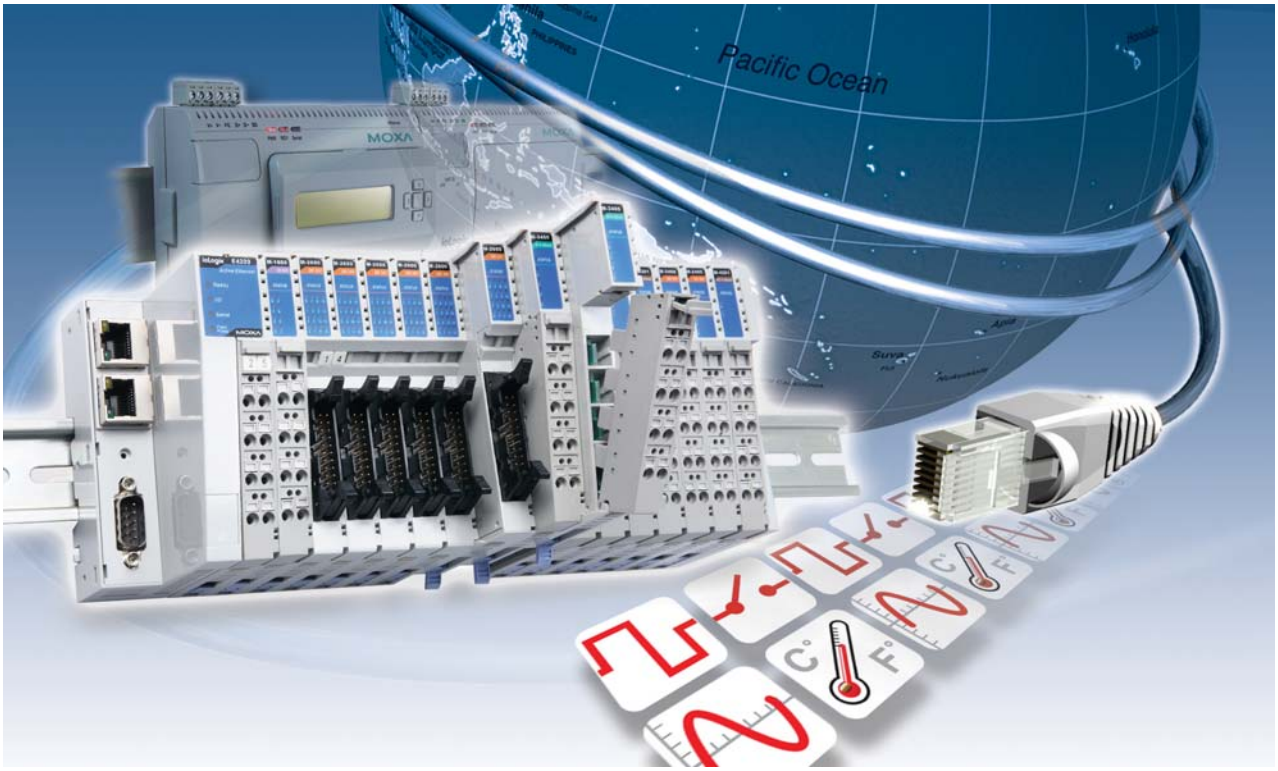
Modular Type I/Os




Model	ioLogik E4200	NA-4010	NA-4020	NA-4021
Category	Modular Active Ethernet I/O	Modular Ethernet I/O	Modular Serial I/O	Modular Serial I/O
Comm. Interface	Dual 10/100M Ethernet	10/100M Ethernet	RS-485	RS-232
Max. Expansion Capacity	16 slices	31 slices	31 slices	31 slices
Control Protocol	Modbus/TCP, SNMP, OPC	Modbus/TCP	Modbus/RTU	Modbus/RTU
Local Intelligence	Click&Go	---	---	---
Alarm Function	SMS, E-mail, SNMP Traps, TCP/UDP Messaging	---	---	---
SMS/GPRS Connectivity	Yes, with an ext. modem	---	---	---

Introduction to Industrial I/O

Intelligent, high-performance, reliable I/O modules for automation



Moxa's ioLogik series of industrial I/O products are intelligent, high-performance, reliable remote I/O solutions that bring the ease of open-standard Ethernet/TCP and serial RS-232/485 communications to automation applications, including data acquisition, and remote monitoring and alarm systems. The ioLogik series also offers greater flexibility by making it easy to install analog, digital, and temperature measurement instruments on the same mounting rack. The ioLogik industrial I/O series is ideal for both stand-alone and high-density mounting on a rack, in a cabinet, or on a panel, and can be easily adapted to industrial applications that require multiple I/O points.

Moxa's industrial I/O products can be divided into several categories, which include Ethernet I/O, Wireless I/O, and Serial I/O. Features such as built-in local intelligence (Click&Go) and a variety of form factors provide a number of options that users can choose from. The Ethernet I/O products, for example, can also be subdivided into Active Ethernet IO (ioLogik E2000 series), Modular Active Ethernet I/O (ioLogik E4200 with its slice type modules), and Peer-to-peer I/O (ioMirror E3210). Serial I/O can be subdivided into Stand-alone RS-485 I/O (ioLogik R2000 series), and Modular I/O (ioLogik NA-4020/4021 network adaptors with slice type modules). The Wireless I/O category currently contains one product, the ioLogik W5340 GPRS I/O.

Active Ethernet I/O

The Most Intelligent I/O for Remote Monitoring and Alarm Applications

ioLogik also supports Active Ethernet I/O, which is a new concept introduced by Moxa that offers proactive, condition-based reporting and the control of I/O devices used for PC-based data acquisition and control. The I/O status of an Active Ethernet I/O device can be reported and controlled automatically on-site based on user specified conditions. This report-by-exception approach, which is new to PC-based monitoring, requires far less bandwidth than traditional polling methods. Critical sensor data can be obtained immediately instead of being confined by the use of polling intervals. This makes network communication between a host computer and Active Ethernet I/O devices concise and efficient, and makes data transmission 20 times faster compared with traditional SCADA systems (50 ms compared to 1 sec).

The intelligence of Active Ethernet I/O is integrated by two parts:

- The programming-free local control logic of Click&Go, and
- Remote I/O control

Click&Go provides a programming-free, easy-to-learn IF-THEN-ELSE style of local I/O control that is capable of combining time-control or delivering TCP/UDP/SNMP Trap/e-mail/SMS messages with time stamp. In addition to Modbus/TCP, Active Ethernet I/O supports the familiar SNMP and HTTP-CGI protocols, giving IT engineers more options for obtaining remote I/O status and sending control commands. In addition, the Active OPC Server package makes it easy to link Active Ethernet I/O to SCADA systems.

Why Choose Active Ethernet I/O?

IA and IT-friendly Remote I/O Control

- Moxa's Active OPC Server can connect an ioLogik to SCADA systems
- Open-standard Modbus/TCP I/O control
- SNMP I/O control for IT-based network management
- CGI command I/O control for surveillance systems
- MXIO Library for WinCE/Linux, C++, VB/VC and .NET platforms

Intelligent Local I/O Control

- IF-THEN-ELSE style programming with no learning curve
- PLC-grade I/O control, timer, schedule, and register functions
- No need for third-party development tools, and no maintenance gaps
- Stand-alone operations require no host control
- Dramatic reduction in project implementation time

CLICK&GO™ LOGIC

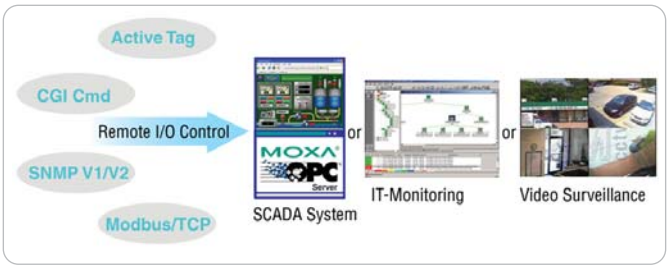
Push Technology for Events and Alarms

- Event-based TCP/UDP messages, SNMP traps, e-mail, SMS, and CGI command output
- Real-time events with time stamp
- Moxa's Active OPC Server package
- Saves bandwidth with no polling effort

Solution-oriented Design

- Easy-to-expand slice-type I/O modules
- Intuitive Windows utility
- Peer-to-peer function
- Dual-LAN redundancy
- Optional LCM module

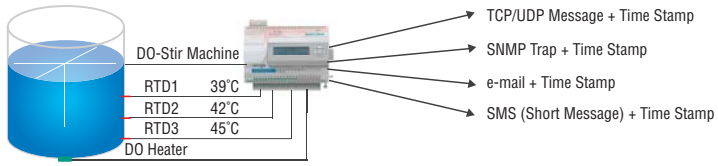
IA and IT-friendly Approaches to Remote I/O Control



In addition to Modbus/TCP, the I/O status of an Active Ethernet I/O device can be controlled in various ways. IT engineers can use SNMP and CGI, whereas IA engineers can use open-standard Active OPC Server. In addition, the MXIO library also offers programmers the benefit of fast implementation.

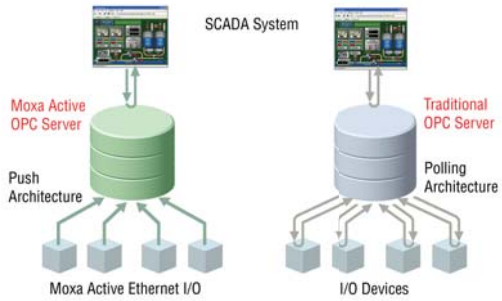
Push Technology for Events and Alarms

Active Messaging



Active Ethernet I/O can be used to generate alarms when an event (user-defined by Click&Go) is triggered. Standard TCP or UDP packets can be sent to a central host, SNMP traps can be sent to IT monitoring systems, and e-mail/SMS messages can be sent to the site maintainer.

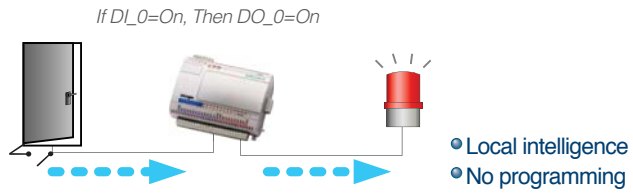
Active OPC Server Connection to SCADA



Active OPC Server Lite is a free software package provided by Moxa that operates as an OPC driver for an HMI or SCADA system. Active OPC Server Lite offers seamless connection from Moxa's ioLogik series products to SCADA systems with 7 times the normal response, 50 times faster tag installation, and an 80% reduction of network bandwidth usage compared with other traditional OPC packages on the market.

Intelligent Local I/O Control

Local Alarm & I/O Control



Active Ethernet I/O can be used for simple output control that is triggered by input status, without a PC controller. For example, a door sensor can be configured to trigger an alarm. Configuration is done through intuitive If/Then statements, with no programming required.

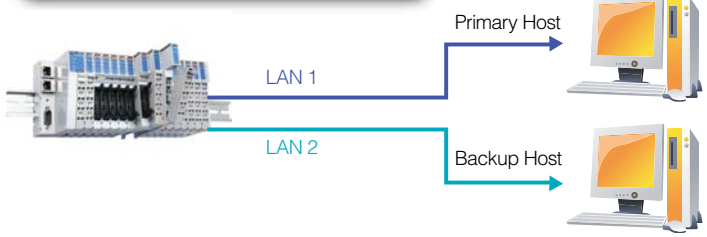
Instant Event Reporting by Input Status

- Improves data acquisition and control system efficiency
- More accurate and timely measurements to prevent data loss

Instead of relying on host computers that continually poll I/O devices for data, Active Ethernet I/O devices can proactively report sensor status using TCP or UDP messages. Proactive messaging allows much faster notification of I/O events and generates much lower network and CPU loads. Message content is fully customizable, and up to 10 simultaneous destinations are supported.

Solution-oriented Design

Dual-LAN Redundancy



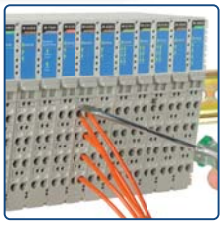
The ioLogik E4200 series of Modular Active Ethernet I/O products come with dual network interfaces, which have separate MACs and IP addresses to connect to different network segments. Redundancy can be easily implemented to improve system reliability by allowing hosts located on different networks to control or monitor your system.

Peer-to-Peer Communication over Ethernet

The ioMirror E3000 series of Ethernet I/O products are designed as cable replacement solutions that send input signals to remote outputs over an IP network. ioMirror products can be used to connect remote sensor signals to PLC controllers, DCS systems, or display devices over a network, without installing additional signal wires.

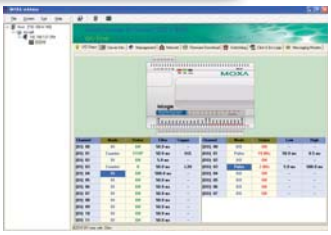
Easy Expansion with Slice-type Modules


Slice Type I/O Modules


Spring Type Terminal Block

The ioLogik 4000 provides spring type, removable terminal blocks (RTBs) that allow you to preserve field wiring before replacing an I/O expansion module. Each I/O expansion module can be replaced quickly and easily.

Intuitive Windows Utility



ioLogik remote I/O products come with a very user-friendly Windows utility that includes remote configuration, firmware updates, and I/O testing and monitoring functions. These functions can save you many hours of installation and troubleshooting, and all settings can be saved to a file for future reference.

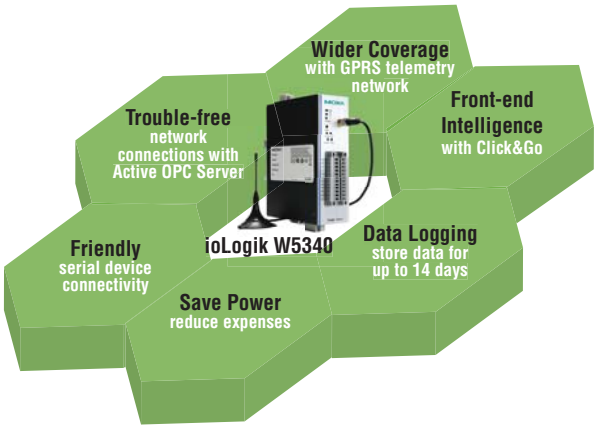
Optional LCD Module

The ioLogik 2000 series of stand-alone remote I/O products provides an optional LCD module for on-site management and configuration. The unique display module can display network and I/O settings. You can change network settings to ensure the speed of installation and future maintenance.

Wireless I/O

Integrating I/O and GPRS Communications

Active GPRS I/O is a highly integrated solution that combines GPRS communications, front-end intelligence, and a front-end data logging function for information analysis and prediction. By using GPRS technology, the ioLogik W5000 series gives remote monitoring applications maximum coverage. The W5000 series products come with one 3-in-1 serial port (RS-232/422/485) to connect field serial devices such as meters, analyzers, and instruments. The ioLogik W5000 is a perfect fit for remote monitoring and alarm systems for which wired connections are difficult or impossible, such as unmanned site monitoring, riverside monitoring, and pipeline monitoring.



Trouble-free Connections to GPRS Networks

Managing dynamic IP addresses for automation projects that require setting up connections to the GPRS network can be a big headache for engineers. Thanks to Active GPRS I/O with Push Technology and Active OPC Server, dynamic IP addresses can be managed between the Active GPRS I/O product and the Active OPC Server. In this case, SCADA programs can receive data from the Active OPC Server without putting additional effort into managing IP addresses.

Most traditional solutions use DDNS or a purchased service package from an MVNO (Mobile Virtual Network Operator) to make IP management easier. GPRS networks usually offer a dynamic IP environment with the IP address assigned by the cellular service provider, but it is difficult to poll a GPRS device's data in a dynamic IP environment. Even with DDNS technology, SCADA projects still need to allocate resources to manage the DDNS server.

Moxa's Active OPC Server makes it easy to install an ioLogik W5000 in a GPRS dynamic IP environment, and since remote Active GPRS I/O automatically establishes communication with Active OPC Server, all remote Active GPRS I/Os can be managed by one centralized Active OPC Server, which itself has a fixed IP address. Active OPC Server receives and registers the ioLogik W5000's IP address and receives tag updates, and application programs can poll data via Active OPC Server without exerting any effort on IP management.

Front-End Intelligence for Handling Events

The Click&Go software package provides Active GPRS I/O with front-end intelligence for event response and alarms. When a pre-defined event is triggered, a variety of alarms, such as SMS, email, TCP/UDP packets, and SNMP Trap, can be sent actively, and depending on the type of configuration you're using, real time stamps can also be attached.

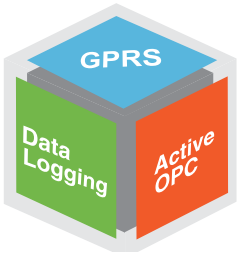
Friendly Serial Device Connectivity

Active GPRS I/O devices are equipped with one 3-in-1 (RS-232/485/422) serial port. When GPRS is on line, the Active GPRS I/O device will establish a TCP Client connection with the PC software, and then use this transparent data tunnel to poll or read remote meters. Thanks to the Active GPRS I/O device's TCP Client support, dynamic IP addresses are no longer a problem.

Data Logging—Store up to 14 Days of I/O Records

ioLogik Active GPRS I/O devices come with an external SD card slot that can be used to store I/O status, with each day's records stored in a separate file. The files are stored in .CSV file format and use TFTP protocol for exchanging files between the PC and Active GPRS I/O device, making it easy for users to import the records into a database and display in chart format.

The Benefits of Integration



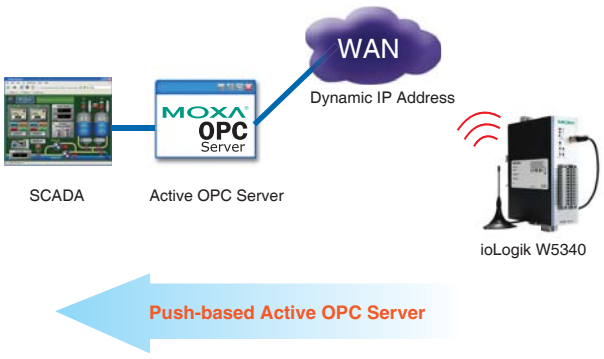
- Easy to Install
- Extra Power Savings
- Caller ID for Security
- Needs only a Sliver of Bandwidth

ioLogik Active Wireless I/O provides an integrated solution with a number of important benefits.

Easy Installation

By supporting Moxa's powerful Active OPC Server, Active GPRS I/O products can be easily integrated with your SCADA system. Moxa's Active OPC Server with non-polling architecture supports the standard OPC protocol, but also offers active (or "push") communication between Moxa's ioLogik series of Active GPRS I/O products and HMI/SCADA systems with instant I/O status.

Unlike the fixed IP requirement for Ethernet I/O with a traditional OPC server, Active OPC Server and ioLogik products deliver the flexibility of using dynamic IP addresses. The ioLogik product can connect directly to the Active OPC Server instead of being polled, which makes the dynamic IP configuration and WAN Access of the GPRS I/O possible. As far as traditional data acquisition applications are concerned, I/O devices are not capable of using this approach. In addition, the flexibility of being able to connect through a firewall is a useful feature.



Active OPC Server and ioLogik series products offer "Auto Tag Generation" to eliminate the need to specify target IP addresses, I/O channels, and data formats one by one or edit and import configuration text files. Instead, Active OPC Server creates the tags for the target ioLogik automatically. Simply select the channels that need to be updated, and the tags are generated and configured without needing any input from the user. Generally speaking, tag generation is 50 times faster on Active OPC Server than with traditional OPC server packages, and training on how to install and configure the OPC server is no longer necessary.

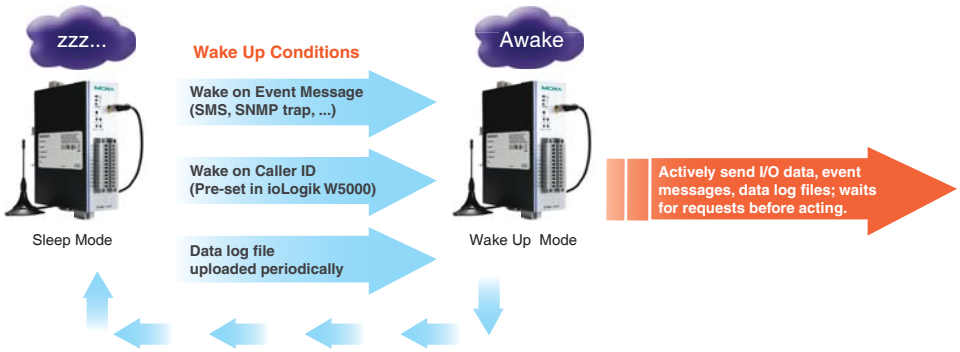
Low Power Consumption and Sleep Mode

Due to the high integration of GPRS communication, I/O functions, and data-logging, the power consumption of Moxa's integrated solution is half that of using separate solutions. You will be able to build a system that uses a smaller solar power panel and lower battery capacity. For example, the ioLogik W5340 provides the optimal solution for riverside monitoring applications, such as monitoring water flow to prevent flood disasters, or monitoring water quality to protect the supply of drinking water. This solution's power saving feature requires less power, even when the power is supplied by a solar panel or battery. It also provides a data logging function for keeping the necessary data on an SD card, and you can receive active messages automatically when a pre-defined condition is triggered.

When sleep mode is activated, the ioLogik W5340 will turn off GPRS communications, but keep the I/O function working, and the status of all I/O activity will be recorded in a data Log file. The data log function will create a new file every day and can be configured to upload the latest data to a host every night at midnight. In addition to ensuring that all data is sent to your analysis system, you can also extend your I/O operation while using backup battery power.

Secure Wake on Call

There are three ways to wake up an ioLogik Active GPRS I/O. The first is wake up by event, such as with an active message, SMS, email, or SNMP Trap. The second is wake on call. In this case, the ioLogik W5340 can be woken by a secure caller ID. In sleep mode, the ioLogik W5340 will disconnect all communications except GSM. The only way you can connect is with wake on call. If your caller ID is configured in the ioLogik W5340, it will wake up from sleep mode. Once the ioLogik W5340 receives a call, it will identify the caller ID and then hang up the phone without incurring any expense. If the caller ID is in the authorized list, a connection to the Active OPC Server will be initiated and a communication channel will be initiated using the IP address. Since your caller ID must be authorized, you can ensure that your data is secure. The third method is to configure the data log system to upload your data every night at midnight.



Stay Alive with a Small Bandwidth

Compared with the traditional "polling" architecture, which results in a longer response time since more network bandwidth is used, the ioLogik Active GPRS I/O uses "push" technology to report active messages when predefined events occur. This event-driven logic improves the I/O response time and results in I/O access that is more precise. In addition, you will see a big reduction in your communication expense since the system uses a limited amount of bandwidth, and this innovative push-based architecture reduces CPU loading, which means that less maintenance is required and lower level hardware devices can be used.

Serial I/O

Linking Input and Output Signals over a Serial Connection

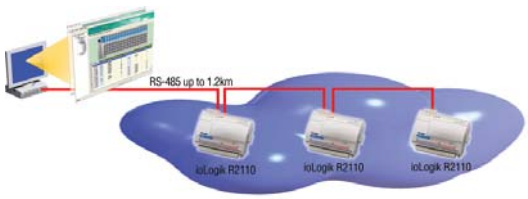
The ioLogik R2000/4000 series was designed for system integrators to acquire and control remote digital and analog devices over both RS-232 and RS-485 connections. Different types of digital on/off devices can be controlled, including proximity switches, mechanical switches, push buttons, optical sensors, LEDs, and light switches. In addition, different types of analog devices can be controlled, including sensors that read pH, conductivity, temperature, humidity, pressure, and flow, as well as actuators and valves. ioLogik R2000/4000 series products can be used with the standard Modbus protocol, and SCADA software or the MXIO DLL library can be used to access the server.

More Choices for Stand-alone and Modular Solutions

The ioLogik R2000 is designed as a stand-alone serial I/O solution. Two model groups are available. The ioLogik R2110 has 12 DIs and 8 DOs, and the ioLogik R2140 has 8 AIs and 2 AOs. In addition to being installed separately, two or more ioLogik R2000 devices can be connected together via a system bus that includes sharing the system's power. The modular ioLogik 4000 system consists of a network adaptor plus up to 31 slice-type I/O modules. The ioLogik connects to the host controller via RS-485, and the ioLogik NA-4020 and NA-4021 support individual RS-485 and RS-232 connections.

Easy Remote Management

Traditionally, it was difficult for users to update firmware over RS-485. Moxa now provides an easy method for updating firmware over an RS-485 network that allows users to perform remote firmware updates, reducing maintenance time and cost.



Snap-On LCD Module

Traditionally, a PC was required to configure a remote I/O. To get around this, Moxa now offers an optional snap-on LCD module to give users a much easier way to configure and monitor ioLogik R2000 series products. The LCD module is hot-pluggable, which means that it can be installed or removed without turning off the server.

Common Specifications for ioLogik E2000 Series Active Ethernet I/O Products

LAN

Ethernet: 1 x 10/100 Mbps, RJ45

Protection: 1.5 KV magnetic isolation

Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP (MIB for I/O and Network), HTTP, CGI, SNTP

Serial Communication

Interface: RS-485-2w: Data+, Data-, GND

Serial Line Protection: 15 KV ESD for all signals

Serial Communication Parameters

Parity: None

Data Bits: 8

Stop Bits: 1

Flow Control: None

Baudrate: 1200 to 115200 bps

Protocol: Modbus/RTU

Power Requirements

Power Input: 24 VDC nominal, 12 to 48 VDC

Power Consumption: 282 mA typical @ 24 VDC

Physical Characteristics

Wiring: I/O cable max. 14AWG

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

EMI: FCC Part 15, CISPR (EN55022) class A

EMS: IEC 61000-4, IEC 61000-6

Shock: IEC 60068-2-27

Freefall: IEC 60068-2-32

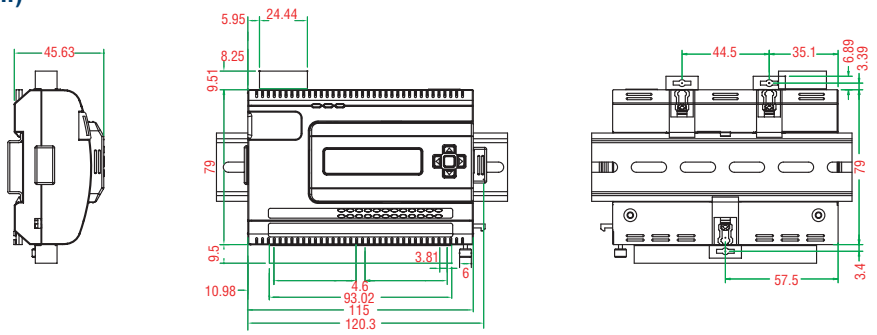
Vibration: IEC 60068-2-6

Warranty

Warranty Period: 2 years

Details: See www.moxa.com/warranty

Dimensions (unit = mm)



Side View | Front View | Rear View

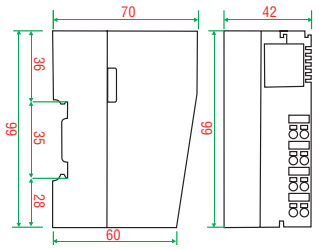
Selection Guide for Active Ethernet I/O Products

I/O Model	Input				Output			DIO
	Digital	Analog	RTD	Thermocouple	Digital	Relay	Analog	
E2210	12	---	---	---	8	---	---	---
E2212	8	---	---	---	8	---	---	4
E2214	6	---	---	---	---	6	---	---
E2240	---	8	---	---	---	---	2	---
E2242	---	4	---	---	---	---	---	12
E2260	---	---	6	---	4	---	---	---
E2262	---	---	---	8	4	---	---	---

Dimensions of ioLogik 4000/E4200 Series Modular I/O Products

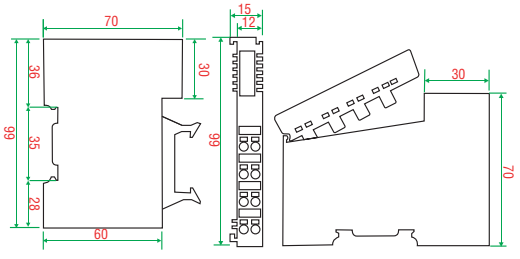
Dimensions (unit = mm)

I/O Network Adaptor



Side View | Front View

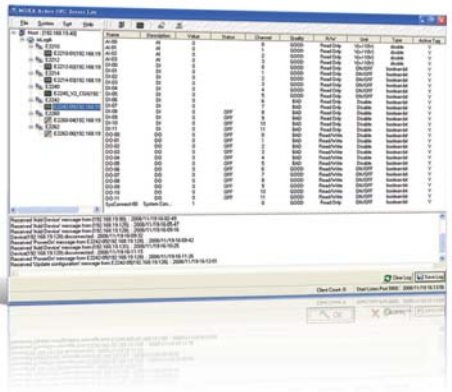
I/O Module



Side View | Front View | Removable View

Active OPC Server Lite

Seamlessly connect ioLogik to your SCADA system



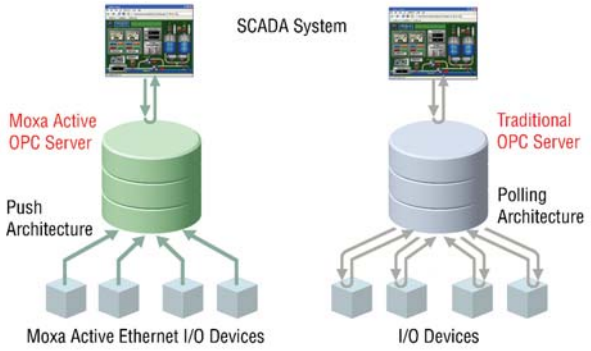
- **OPC DA 3.0 supported**
- **Event-driven tag update**
  - Save 80% on network bandwidth
  - I/O response that's 7 times faster
- **Patented automatic tag generation**
- **Firewall-friendly connection from remote ioLogik devices**
  - Allows remote I/O to use dynamic IP
  - Allows remote I/O to use private IP
- **Download free from Moxa's website**

Introduction

Active OPC Server Lite is a software package provided by Moxa that operates as an OPC driver for an HMI or SCADA system. It offers seamless connection from Moxa's ioLogik series products to SCADA systems, including Wonderware, Citect, and iFix. Active OPC Server Lite meets the latest standard of OPC DA 3.0, which allows connections to various kinds of devices and host OPC machines.

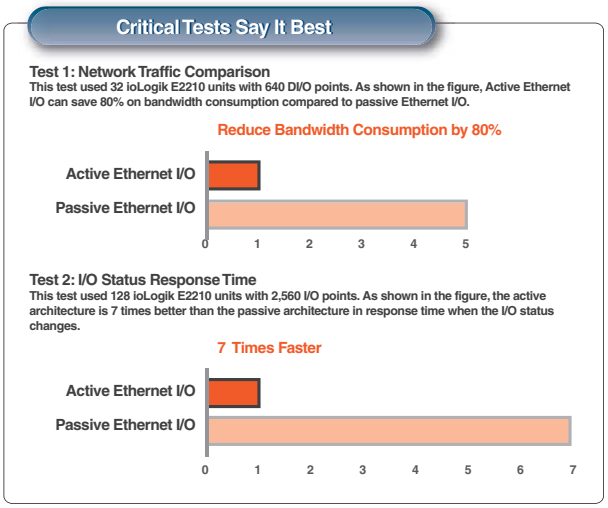
Smart I/O Connection—Migrating from "Pull" to "Push"

General OPC servers typically use the "poll/response," or so-called "pull" architecture, to connect to Ethernet I/O devices, which involves an HMI/SCADA system continuously sending out commands to collect relevant data. Moxa's Active OPC Server, with its non-polling architecture, supports the standard OPC protocol, but also offers active (or "push") communication with Moxa's ioLogik series of Active Ethernet I/O products to HMI/SCADA systems, providing instant I/O status reports.



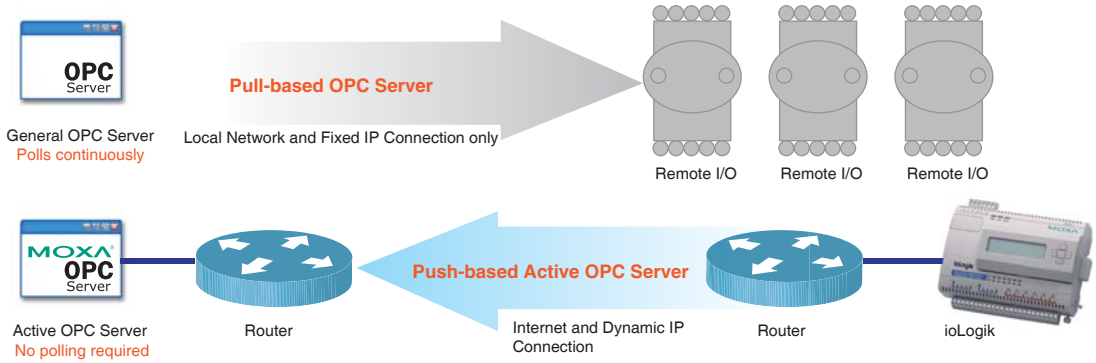
I/O Response that's 7 Times Faster and Provides 80% off Bandwidth Usage with Event-driven Tag Updates

Adding additional I/O channels will tend to bog down an HMI/SCADA system's operation, resulting in a longer response time , and high network bandwidth occupation, all because of the traditional "pull" architecture. Active tags created by Active OPC Server Lite and ioLogik series products report the I/O status only when it changes. This type of event-driven tag status update results in an I/O response time that is 7 times faster than other OPC Server packages (using a testing environment with 2,560 I/O channels). In a different test of network bandwidth usage, Active OPC Server Lite and the ioLogik caused an apparent 80% reduction in network traffic. The end result is that I/O access is more precise, and the cost of communicating with remote I/O devices is substantially lower, especially when the remote site has limited bandwidth (e.g., satellite, microwave, and cellular communication). At the same time, the CPU usage of the SCADA/HMI system is also reduced by 35% with this innovative push-based architecture, so that less maintenance effort and lower level hardware devices can be implemented.



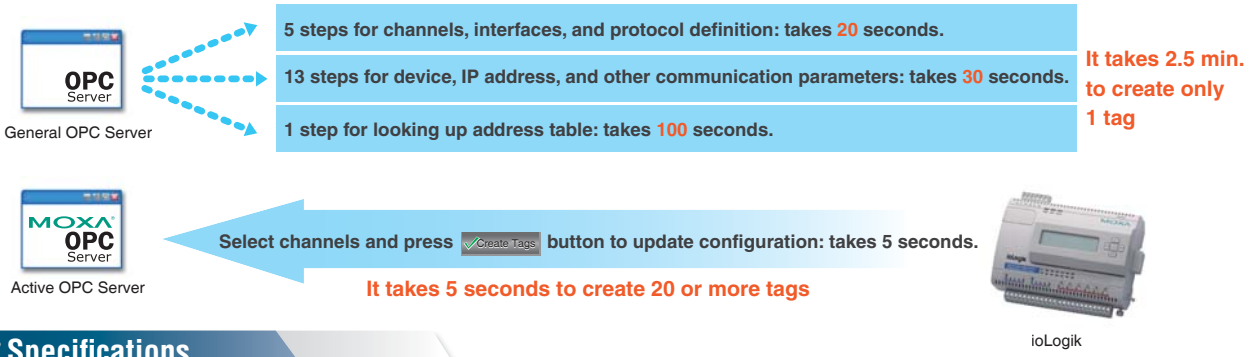
Dynamic IP/WAN Connection

Unlike the fixed IP requirements of Ethernet I/O with a traditional OPC server, Active OPC Server Lite and ioLogik products provide the flexibility of configuring the ioLogik to use dynamic IP addresses. The ioLogik connects directly to the Active OPC Server Lite instead of being polled, which makes dynamic IP addressing and WAN Access to the Ethernet I/O device possible, and adds even greater flexibility by allowing connections across firewalls. I/O devices for traditional data acquisition applications are not capable of using this approach.



Automatic Tag Generation

Active OPC Server Lite and ioLogik series products support "Auto Tag Generation," which eliminates the headache of specifying target IP addresses, I/O channels, and data formats one by one, or editing and importing configuration text files, since Active OPC Server Lite creates the tags for the target ioLogik automatically. Simply select the channels that you need to update, and the tags are generated and configured automatically. Generally speaking, tag generation is 50 times faster with Active OPC Server Lite than with traditional OPC server packages. One of the biggest payoffs is that users will no longer need to be trained to install and configure your OPC.



Specifications

Hardware Requirements

CPU: Intel Pentium (Pentium 4 or above)
RAM: 512 MB (1024 MB recommended)
Network Interface: 10/100Mb Ethernet

Software Requirements

Operating System: Microsoft Windows 2000/XP/2003
Editor (optional): Microsoft Office 2003 (Access 2003) or above

OPC Server Specifications

OPC Data Access: 1.0a, 2.0, 2.05a, 3.0
Max. No. of Tags: 256

Ordering Information

Available Models

Active OPC Server Lite: Free software package for integrating with SCADA/HMI systems

Can be used with the following products

Active Ethernet I/O: ioLogik E2210/E2212/E2214/E2240/E2242/E2260/E2262 Series
Modular Active Ethernet I/O: ioLogik E4200
Cellular GPRS I/O: ioLogik W5340

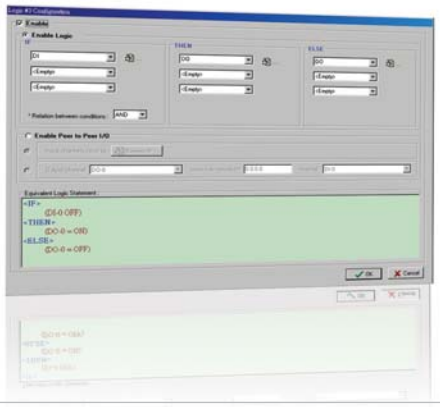
Software Versions and Model Support Table

ioLogik Model Name	E2210	E2212	E2214	E2240	E2242	E2260	E2262	E4200*	W5340*
Active OPC Server Lite	V1.0↑	V1.0↑	V1.0↑	V1.1↑	V1.1↑	V1.1↑	V1.1↑	V1.3↑	V1.2↑
Configuration Utility	ioAdmin V3.0↑	ioAdmin V3.0↑	ioAdmin V3.0↑	ioAdmin V3.1↑	ioAdmin V3.1↑	ioAdmin V3.1↑	ioAdmin V3.1↑	Modular ioAdmin V1.1↑	ioAdmin V3.2↑
Firmware	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V1.1↑	V1.0↑

*Note: The version numbers for these models are preliminary. Please see Moxa's website for the most up-to-date information.

Click&Go

Easy and intuitive I/O control configuration for the ioLogik Active Ethernet I/O



- PC-free solution with local intelligence
- Programming-free IF-THEN-ELSE logic reduces setup time
- Time stamped active alarm report with TCP, UDP, SNMP Trap, email, SMS, or CGI commands
- Time-based scheduler and timer control
- Input-to-output control over IP with peer-to-peer and remote action

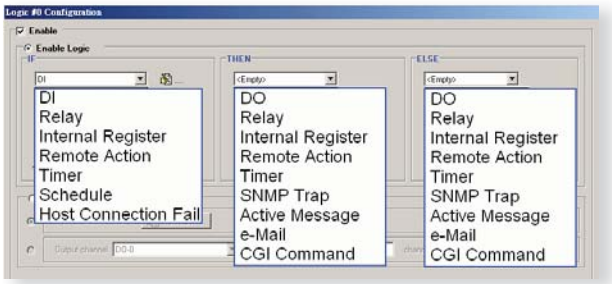
Introduction

PC-free Alarm and Control Solution

Moxa's own Click&Go™ logic turns your ioLogik E2000, E4200, and W5340 remote I/O unit into a compact and powerful RTU by allowing you to configure basic input to output controls, even if users have no programming knowledge. Click&Go™ is such a powerful software solution that when used with the ioLogik series products, Click&Go enables these remote I/O to have local control ability working without the control of a remote PC, or to keep operating when the remote PC or the network is down. Besides the basic local I/O control, alarm messages such as SNMP traps, TCP/UDP messages, e-mails and CGI commands can be triggered when there is an event.

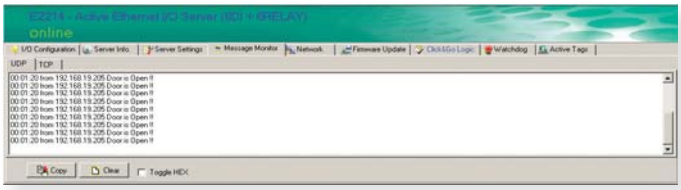
Set Up Your System with Just a Few Clicks

Click&Go™ is a programming-free function set solution that displays the control options you need in an easy to access drop-down menu. This means that you are never more than a few mouse clicks away from getting your system set up and ready to go without a compiler or a debugger. Click&Go's intuitive IF-THEN-ELSE logic shortens the learning curve and deployment time.



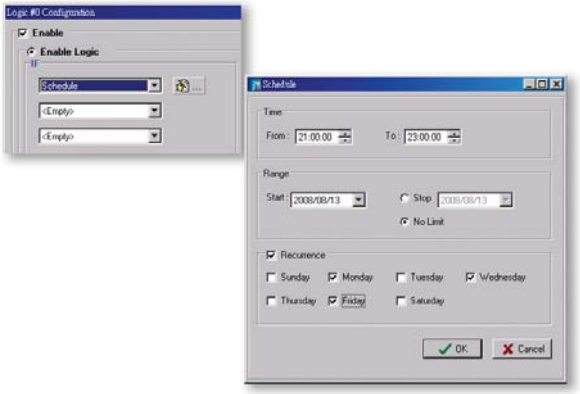
Active Alarm Reports Make Your Monitoring System Real-time

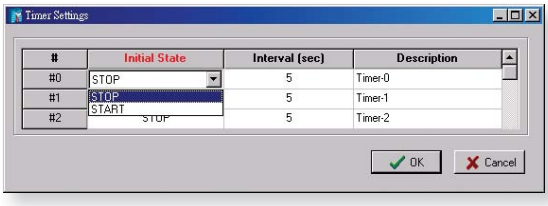
Click&Go™ is designed to provide a simple configuration platform and real-time monitoring capability. For any alarm system, fast response and real-time monitoring is very important. Click&Go™ supports various active communication methods, including TCP, UDP, SNMP Trap, email, and CGI commands, making it very easy to integrate Click&Go™ with any monitoring system. Click&Go™ also supports SNTP for time alignment, making sequential and historical alarm tracking possible. In addition, users can define the content of alarm messages themselves, making Click&Go™ a perfect solution for system users.



Click&Go™ Provides Time-based Scheduler and Timer Control

Click&Go™ can be scheduled to perform user defined tasks such as output control, remote actions, and active messaging. This function is useful when applied to energy savings, lighting control, and water pumping systems. The timer function allows users to set a delay period for actions, which is particularly useful when used with alarm systems for which users need an authentication period to avoid false alarms.





Click&Go™ Function Comparison

Click&Go™ is now available on all ioLogik products, recent function improvements are shown in the table at the right.

Improvements in Programming Method and Rules

	Programming Method	Programming Rules
Click&Go V1.x	IF-THEN	16 Rules
Click&Go V2.x	IF-THEN-ELSE	24 Rules

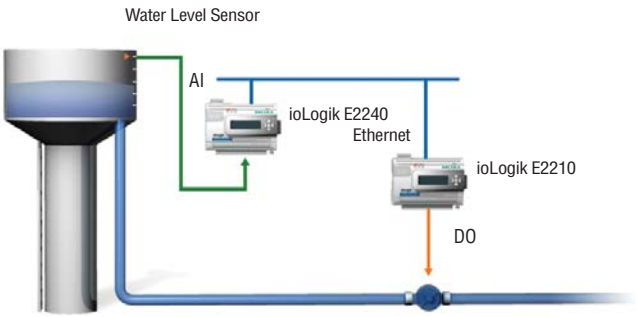
Function Support

	Click&Go V1.0	Click&Go V1.1	Click&Go V2.x
Input Monitor and Output Control	√	√	√
Counter Monitor and Reset	√	√	√
Timer Trigger	√	√	---
Delay Timer	---	√	---
Timer	---	---	√
Internal Register	---	√	√
Remote Action	---	---	√
Schedule	---	---	√
SNMP Trap	√	√	√
Active Messaging	√	√	√
Email	√	√	√
CGI Commands	---	---	√

Input-to-Output Control over IP Networks

Click&Go™ enables direct input-to-output control over IP networks, without the need for additional PCs. That is, when used in pairs, the ioLogik E2000 units can talk directly to each other, and digital inputs can be reproduced at a remote location over the network. Local analog inputs can also be referenced for remote digital outputs. A typical application can be found in water pumping systems where analog inputs that measure the water level are referenced to activate the pumps On/Off control. By cross referencing the scheduler, less energy will be used to operate the water pumping system.

Energy Savings for Water Pumping Systems



Click&Go™ Support Versions

To use the latest version of Click&Go™, simply upgrade the ioLogik's firmware. But first, be sure to download the latest configuration utility before proceeding to update the firmware.

ioLogik Model	E2210	E2212	E2214	E2240	E2242	E2260	E2262	E4200	W5340
Configuration Utility	ioAdmin V3.0↑	ioAdmin V3.0↑	ioAdmin V3.0↑	ioAdmin V3.1↑	ioAdmin V3.1↑	ioAdmin V3.1↑	ioAdmin V3.1↑	modular ioAdmin V1.0↑	ioAdmin V3.2↑
Firmware	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V3.0↑	V1.0↑	V1.0↑

ioLogik E2210

Active Ethernet I/O with 12 digital inputs and 8 digital outputs

- Instant event messaging by TCP/UDP/email/SNMP-trap
- Easy-to-use Click&Go™ Logic for local output control
- 12-point 24 VDC digital input with counter
- 8-point 24 VDC digital output with pulse output
- PC-based configuration utility and web console
- I/O control over Modbus/TCP and SNMP protocol
- Windows/WinCE VB/VC.NET and Linux C APIs
- Peer-to-Peer I/O without controller

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Simple Applications without Programming

The ioLogik E2210 can convert a trigger event result directly into a digital alarm output. This can be set up using the ioAdmin UI to define an IF-THEN Logic rule, eliminating the need to write programs for PCs or controllers.

Software Event Counter Input and Pulse Output

Each digital input can be independently configured for DI or Event Counter mode, and output can be independently configured for DO or Pulse Output mode.

Specifications

Digital Input

Channels: 12, source type
Sensor Type: NPN, Dry contact
I/O Mode: DI or Event Counter (up to 900 Hz)
Dry Contact:
• Logic 0: short to GND
• Logic 1: open
Wet Contact:
• Logic 0: 0 to 3 VDC
• Logic 1: 10 to 30 VDC (DI COM to DI)
Common Type: 12 points per COM
Isolation: 3K VDC or 2K Vrms
Counter/Frequency: 900 Hz
Digital Filtering Time Interval: Software selectable
Over-voltage Protection: 36 VDC

Digital Output

Channels: 8, sink type, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output (up to 100 Hz)
Pulse Wave Width/Frequency: 10 ms/100 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 400 mA (typical)
Over-temperature Shutdown: 175°C (min.)
Output Current Rating: Max. 200 mA per channel
Isolation: 3K VDC or 2K Vrms

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DI.COM	DI0	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10	DI11	DI.GND	DO.PWR	DO0	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO.GND

Ordering Information

ioLogik E2210: Active Ethernet I/O with 12 digital inputs and 8 digital outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E2212

Active Ethernet I/O with 8 digital inputs, 8 digital outputs, and 4 configurable DIO

- Selectable digital I/O combination (by software)
- Accepts PNP or NPN sensors
- DI counter saved automatically when power shuts off
- Instant event messaging by TCP/UDP/email/SNMP trap
- Easy-to-use Click&Go™ Logic for local output control
- PC-based configuration utility and web console
- I/O control over Modbus/TCP and SNMP protocol
- Windows/WinCE VB/VC.NET and Linux C APIs
- Peer-to-Peer I/O without controller

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Flexible Digital Input/Output Configuration

The ioLogik E2212 provides system integrators with the flexibility to handle various field demands with channels that can be configured by software for input or output operation. You can configure the I/O channels to suit your needs, for combinations such as 12-inputs/8-outputs, 8-inputs/12-outputs, or 10-inputs/10-outputs.

Single Ethernet DIO that Accepts 3 Sensor Types

Unlike traditional Ethernet I/O products, the ioLogik E2212 can connect to dry contact, PNP, and NPN sensors at the same time. You can choose the sensor type based on your wiring approach.

Specifications

Digital Input

Channels: 8, source/sink selectable
Sensor Type: 2 6-point groups for NPN/PNP type
I/O Mode: DI or Event Counter (up to 900 Hz)
Dry Contact:
• Logic 0: short to GND
• Logic 1: open
Wet Contact: (For Source Type)
• Logic 0: 0 to 3 VDC
• Logic 1: 10 to 30 VDC (DI COM to DI)
Common Type: 6 points per COM
Isolation: 3K VDC or 2K Vrms
Counter/Frequency: 900 Hz, power off storage
Digital Filtering Time Interval: Software selectable
Over-voltage Protection: 36 VDC
Poweroff Counter Memory: 48 bytes

Digital Output

Channels: 8, sink type, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output (up to 100 Hz)
Pulse Wave Width/Frequency: 10 ms/100 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 400 mA (typical)
Over-temperature Shutdown: 175°C (min.)
Output Current Rating: Max. 200 mA per channel
Isolation: 2K Vrms or 3K VDC (Magnetic)

DI/DO Configurable Channels

Channels: 4
I/O Mode:
• DI or Event Counter (up to 900 Hz)
• DO or Pulse Output (up to 100 Hz)

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DI.COM1	DI0	DI1	DI2	DI3	DI4	DI5	DI.COM2	DI6	DI7	DIO8	DIO9	DIO10	DIO11	GND	DO0	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO.PWR

Ordering Information

ioLogik E2212: Active Ethernet I/O, with 8 digital inputs, 8 digital outputs, and 4 DIOs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E2214

Active Ethernet I/O with 6 digital inputs and 6 relay outputs

- 6 DIs supporting PNP, NPN, and dry contact
- 6 Form A relay outputs (Normal Open)
- Relay specifications: 5 A @ 250 VAC, 5 A @ 30 VDC
- Instant event messaging by TCP/UDP/email/SNMP-trap
- DI and Relay counter saved when the power is shut off
- PC-based configuration utility and web console
- Power On default relay status setting with sequence
- Easy-to-use Click&Go™ Logic for local output control
- Windows/WinCE VB/VC.NET and Linux C APIs
- I/O control over Modbus/TCP and SNMP protocol

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Remote Ethernet Relay Control

The ioLogik E2214 is a stand-alone Active Ethernet I/O product with 6 digital inputs and 6 relay outputs. The DIN-Rail mountable E2214 can be connected to digital switches, alarm lights, buzzers, and warning sirens over Ethernet and IP-based networks. The ioLogik E2214 also records the built-in relay output usage counter. Even when a sudden power failure is encountered, the ioLogik E2214 will still be able to record the relay output usage counter in its internal memory before the power shuts down completely.

Specifications

Digital Input

Channels: 6, source/sink selectable
Sensor Type: NPN, PNP, and Dry contact
I/O Mode: DI or Event Counter (up to 900 Hz)
Dry Contact:
• Logic 0: short to GND
• Logic 1: open
Wet Contact:(For Source Type)
• Logic 0: 0 to 3 VDC
• Logic 1: 10 to 30 VDC (DI COM to DI)
Common Type: 6 points per COM
Isolation: 3K VDC or 2K Vrms
Counter/Frequency: 900 Hz, power off storage
Digital Filtering Time Interval: Software selectable
Over-voltage Protection: 36 VDC
Poweroff Counter Memory: 48 bytes
Relay Counter Saving: Yes

Relay Output

Channels: 6 Form A (N.O.) relay outputs, 5A
Contact Rating: 5 A @ 30 VDC, 5 A @ 250 VAC, 5 A @ 110 VAC
Inductance Load: 2 A
Resistance Load: 5 A
Breakdown Voltage: 500 VAC
Relay On/Off Time: 10 ms, 5 ms (Max.)
Initial Insulation Resistance: 1G min. @ 500 VDC
Expected Life: 100,000 times (Typical)
Initial Contact Resistance: 30 milli-ohms (Max.)
Pulse Output: 0.3 Hz at rated load

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DI.COM1	DI0	DI1	DI2	GND		DI.COM2	DI3	DI4	DI5	GND		R0 NO	R0 C	R1 NO	R1 C	R2 NO	R2 C	R3 NO	R3 C	R4 NO	R4 C	R5 NO	R5 C

DI Group 1 — DI Group 2 — Relays 0 to 5

Ordering Information

ioLogik E2214: Active Ethernet I/O with 6 digital inputs and 6 relay outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E2240

Active Ethernet I/O with 8 analog inputs and 2 analog outputs

- 8-channel analog inputs for voltage, current signal
- 2-channel analog outputs for voltage, current actuator control
- Instant event messaging by TCP/UDP/email/SNMP-trap
- Easy-to-use Click&Go™ Logic for local output control
- PC-based configuration utility and web console
- Windows/WinCE VB/VC.NET and Linux C APIs
- I/O control over Modbus/TCP and SNMP protocol
- NIST-traceable calibration

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Combination of analog input and output

The ioLogik E2240 comes with a combination of analog inputs and analog outputs in one module, and supports a wide range of sensors and actuators, including pH, conductivity, pressure, flow, and valves.

Specifications

Analog Input

Channels: 8 analog inputs with differential input
Resolution: 16 bits
I/O Mode: Voltage / Current
Input Range: ±150 mV, ±500 mV, ±5 V, ±10 V, 0 to 20 mA, 4 to 20 mA
Data Format: 16-bit integer (2's complement)
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -10 and 60°C
Sampling Rate (all channels):
• 10 samples/sec for voltage
• 6 samples/sec for current
Input Impedance: 900K ohms (min.)
Built-in Resistor for Current Input: 106 ohms
CMR @ 50/60 Hz: 95 dB min.
Zero Drift: ±9 μV/°C
Span Drift: ±25 ppm/°C
Isolation: 3K VDC or 2K Vrms

Analog Output

Channels: 2
Resolution: 12 bits
Output Range: 0 to 10 V, 4 to 20 mA
Drive Voltage: 15 VDC for current output
Accuracy:
±0.1% FSR @ 25°C,
±0.3% FSR @ -10 and 60°C
Zero Drift: ±9 μV/°C
Span Drift: ±25 ppm/°C
Load Resistor: Less than 250 ohms

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Vin0+	Vin0-	Vin1+	Vin1-	Vin2+	Vin2-	Vin3+	Vin3-	Vin4+	Vin4-	Vin5+	Vin5-	Vin6+	Vin6-	Vin7+	Vin7-	Vout0+	Vout0-	Iout0+	Iout0-	Vout1+	Vout1-	Iout1+	Iout1-

Ordering Information

ioLogik E2240: Active Ethernet I/O with 8 analog inputs and 2 analog outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E2242

Active Ethernet I/O with 4 analog inputs and 12 configurable DIOs

- 4 fixed differential analog input channels
- 12 configurable digital input/output channels
- DI counter saved automatically when power shuts off
- Instant event messaging by TCP/UDP/email/SNMP-Trap
- PC-based configuration utility and web console
- Easy-to-use Click&Go™ Logic for local output control
- Windows/WinCE VB/VC.NET and Linux C APIs
- I/O control over Modbus/TCP and SNMP protocol
- NIST traceable calibration

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Better I/O Matrix for Monitoring—Moxa's ioLogik E2242 is tailormade for use with remote monitoring and alarm systems. This Active Ethernet I/O product provides 4 analog inputs and 12 configurable DIOs for a 1:3 ratio of analog IOs to digital IOs perfectly adapted to water tank monitoring and environmental monitoring applications, in which 1 analog input is used to trigger 3 digital outputs as High-High, High, and Low alarms. Moxa's ioLogik E2242 lets you set up your monitoring system without the need for a local PC or RTU.

Specifications

Analog Input

Channels: 4 analog inputs with differential input
Resolution: 16 bits
I/O Mode: Voltage / Current
Input Range: ±150 mV, 0 to 150 mV, ±500 V, 0 to 500 mV, ±5 V, 0 to 5 V, ±10 V, 0 to 10 V, 0 to 20 mA, 4 to 20 mA
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -10 and 60°C
Sampling Rate (all channels): 100 samples/sec
Input Impedance: 200K ohms (min.)
Built-in Resistor for Current Input: 102 ohms

DI/DO Configurable Channels

Channels: 12
I/O Mode:
• DI or Event Counter (up to 900 Hz)
• DO or Pulse Output (up to 100 Hz)

Digital Input

Channels: Up to 12, source/sink selectable
Sensor Type: NPN, PNP, and Dry contact
I/O Mode: DI or event counter (up to 900 Hz)
Dry Contact:
• Logic 0: short to GND; • Logic 1: Open
Wet Contact: (For Source Type)
• Logic 0: 0 to 3 VDC; • Logic 1: 10 to 30 VDC
Common Type: 6 points per COM
Isolation: 3K VDC or 2K Vrms
Counter/Frequency: 900 Hz, power off storage
Digital Filtering Time Interval: Software selectable
Over-voltage Protection: 36 VDC
Poweroff Counter Memory: 48 bytes

Digital Output

Channels: Up to 12, sink type, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output (up to 100 Hz)
Pulse Wave Width/Frequency: 10 ms/100 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 400 mA (typical)
Over-temperature Shutdown: 175°C (min.)
Output Current Rating: Max. 200 mA per channel
Isolation: 2K Vrms or 3K VDC (Magnetic)

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Ain0+	Ain0-	Ain1+	Ain1-	Ain2+	Ain2-	Ain3+	Ain3-	DI.COM1	DIO0	DIO1	DIO2	DIO3	DIO4	DIO5	GND	GND	DIO6	DIO7	DIO8	DIO9	DIO10	DIO11	DI.COM2

Ordering Information

ioLogik E2242: Active Ethernet I/O with 4 analog inputs and 12 configurable DIOs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E2260

Active Ethernet I/O with 6 RTD inputs and 4 digital outputs

- Supports PT, JPT, Ni RTD sensor types and resistors
- Adjustable RTD sampling rate
- Instant event messaging by TCP/UDP/email/SNMP-trap
- PC-based configuration utility and web console
- Easy-to-use Click&Go™ Logic for local output control
- Windows/WinCE VB/VC.NET and Linux C APIs
- I/O control over Modbus/TCP and SNMP protocol
- NIST traceable calibration

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Bring Intelligence to Temperature Measurement

The ioLogik E2260 brings intelligence to temperature sensors. It comes equipped with virtual channels that are designed to calculate the average value of each channel and the difference between two channels. And it does all this without a controller or PC.

Compatible with Popular RTD Temperature Sensors

The ioLogik E2260 offers PT100, PT1000, JPT, and Ni sensor types and a resistor of up to 2.2 kilo-ohms, and supports using your own resistance sensor, such as PTC or NTC types for your HVAC applications.

Specifications

RTD

Channels: 6
Input Type: Pt, JPt, Ni, RTD sensor, resistor
Sampling Rate: 12 samples/sec (all channels)
Resolution: 0.1°C or 0.1 ohm
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -10 and 60°C
Input Impedance: 625K ohms (min.)

Digital Output

Channels: 4, sink, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output
Pulse Wave Width/Frequency: 10 ms/100 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 750 mA
Over-temperature Shutdown: 175°C
Isolation: 3K VDC or 2K Vrms

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
EX0	IN0+	IN0-	EX1	IN1+	IN1-	EX2	IN2+	IN2-	EX3	IN3+	IN3-	EX4	IN4+	IN4-	EX5	IN5+	IN5-	DO.GND	DO0	DO1	DO2	DO3	DO.PWR

Ordering Information

ioLogik E2260: Active Ethernet I/O with 6 RTD inputs and 4 digital outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E2262

Active Ethernet I/O with 8 thermocouple inputs and 4 digital outputs

- Supports J, K, T, E, R, S, B, and N type thermocouple and mV modes
- Conversion Time: Less than 90 ms
- Instant event messaging by TCP/UDP/email/SNMP-Trap
- PC-based configuration utility and web console
- Easy-to-use Click&Go™ Logic for local output control
- Windows/WinCE VB/VC.NET and Linux C APIs
- I/O control over Modbus/TCP and SNMP protocol
- NIST traceable calibration

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Extend the Wiring Length

The ioLogik E2262 can extend the wiring length of your sensors up to 10 fold. For example, whereas the wiring for a J-Type may normally extend only 10 m, the ioLogik E2262 can be used to increase the J-Type TC wiring length up to 100 m.

More Accurate Temperates

The ioLogik E2262 has two cold junction compensation sets and supports digital filtering. Calibration, linearization, and calculation are based on the devices traced by the NIST (National Institute of Standards and Technology), and are stored in memory to eliminate this source of error. The ioLogik E2262 can also detect burnout and disconnection.

Specifications

Thermocouple Input

Channels: 8
Sensor Type: J, K, T, E, R, S, B, N type TC and mV mode
Conversion Time: Less than 90 ms
Effective Resolution: 16 bits
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -10 and 60°C
Input Impedance: 1 M ohm or better

Digital Output

Channels: 4, sink type, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output (up to 100 Hz)
Pulse Wave Width/Frequency: 10 ms/100 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 750 mA
Over-temperature Shutdown: 175°C
Isolation: 3K VDC or 2K Vrms

I/O Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TC0 +	TC0 -	TC1 +	TC1 -	TC2 +	TC2 -	TC3 +	TC3 -	TC4 +	TC4 -	TC5 +	TC5 -	TC6 +	TC6 -	TC7 +	TC7 -		DO.GND	DO.GND	DO0	DO1	DO2	DO3	DO.PWR

Ordering Information

ioLogik E2262: Active Ethernet I/O with 8 thermocouple inputs and 4 digital outputs
LDP1602: LCD module with 16 x 2 text and 5 buttons

ioMirror E3210

Ethernet Peer-to-Peer I/O with 8 digital inputs and 8 digital outputs

- Direct input-to-output signal communication over IP
- High speed Peer-to-Peer I/O within 20 ms
- One physical alarm port for connectivity status
- Quick and easy utility and web-based settings
- Local alarm channel
- Remote alarm message
- Supports Modbus/TCP for remote monitoring
- Optional LCD module for simple setting

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

Direct Input-to-Output Communication over IP

ioMirror E3000 Ethernet I/O products are designed as a cable-replacement solution that connects remote digital input signals to output signals over an IP network. The ioMirror E3210 provides 8 digital input channels, 8 digital output channels, and a 10/100M Ethernet interface. Up to 8 pairs of digital input and output signals can be exchanged over Ethernet with another ioMirror E3210, or can be sent to a local PLC or DCS controller. Over a local area network, the ioMirror can achieve a low signal latency (typically less than 20 ms). With ioMirror, remote sensors can now be connected to local controllers or display panels over copper, fiber, or wireless Ethernet infrastructures. Signals can be transmitted over virtually unlimited distances, without noise problems.

Split Sensor Signals to 16 Different Locations

The ioMirror E3000 can split one input signal to two digital output channels at two different IP addresses. Eight tank level signals can be monitored at 16 different display panels, all at the same time.

Local Alarm and Remote Alarm Messages for Monitoring Connectivity

The ioMirror E3210 has a 24 VDC alarm output channel that can activate an attached buzzer or LED display when the connection fails. In addition, both ioMirror modules can send messages to the ioEventLog software, ensuring that at least one of the warning messages will reach the ioEventLog software.

Specifications

LAN

Ethernet: 1 x 10/100 Mbps, RJ45
Protection: 1.5 KV magnetic isolation
Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, HTTP, SNTP

Digital Input

Channels: 8, source type
Sensor Type: NPN, Dry contact
I/O Mode: Digital Input
Dry Contact:
• Logic 0: short to GND
• Logic 1: open
Wet Contact:
• Logic 0: 0 to 3 VDC
• Logic 1: 10 to 30 VDC (DI COM to DI)
Common Type: 8 points per COM
Isolation: 3K VDC or 2K Vrms
Digital Filtering Time Interval: Software selectable
Over-voltage Protection: 36 VDC

Digital Output

Channels: 8, sink type, 36 VDC, 200 mA
I/O Mode: Digital Output
Over-voltage Protection: 45 VDC
Over-current Limit: 600 mA
Over-temperature Shutdown: 160°C
Output Current Rating: Max. 200 mA per channel
Isolation: 3K VDC or 2K Vrms

Alarm Port Output

Channels: 1, sink type
Output Current Rating: Max. 200 mA per channel
Isolation: 3K VDC or 2K Vrms

Power Requirements

Power Input: 24 VDC nominal, 12 to 48 VDC
DO Power: 24 VDC nominal, up to 45 VDC

Physical Characteristics

Wiring: I/O cable max. 14 AWG

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

EMI: FCC Part 15, CISPR (EN55022) class A
EMS: IEC 61000-4, IEC 61000-6
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6

Warranty

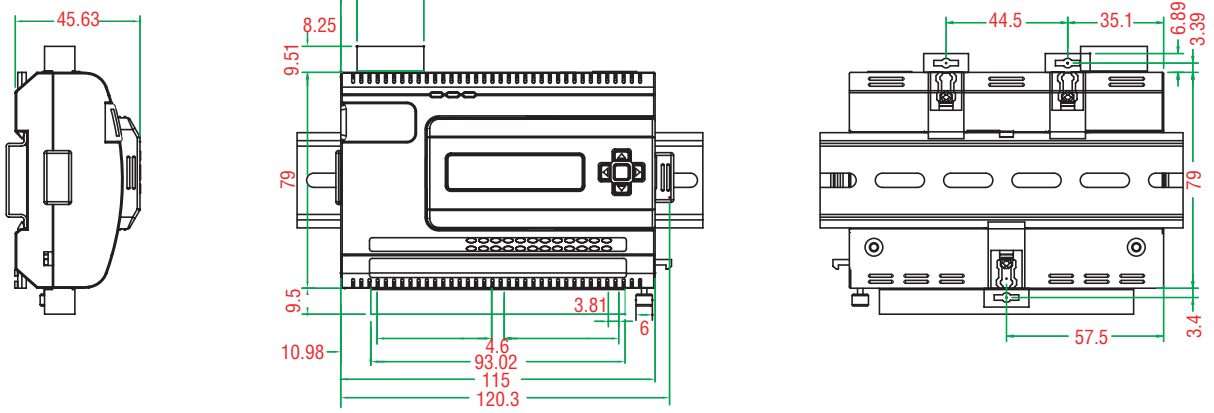
Warranty Period: 2 years
Details: See www.moxa.com/warranty

I/O Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DI.COM	DI0	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI.GND				Alarm	DO.PWR	DO0	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO.GND

Dimensions (unit = mm)



Side View Front View Rear View

Ordering Information

ioMirror E3210: Ethernet Peer-to-Peer I/O with 8 digital inputs and 8 digital outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik E4200

Modular Active Ethernet I/O adaptor

- Supports up to 16 I/O modules
- Dual Ethernet LANs and one RS-232 port
- Front-end intelligence that supports 80 Click&Go rules
- Unicode Active Messaging with real-time stamp, including SMS, SNMP Trap with I/O status, TCP, email
- Built-in web console
- PC utility: Auto detection of installed modules
- Windows/WinCE VB/VC.NET and Linux C APIs

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

The ioLogik E4200 is suitable for remote monitoring and alarm systems, such as are used for water treatment systems, water supply systems, wastewater treatment systems, and power monitoring systems. These kinds of applications need more I/O points and a variety of I/O types, including temperature sensors, gas detectors, and water quality detectors, all of which can benefit from the versatile mixture of I/O features supported by the ioLogik E4200.

Specifications

LAN

Ethernet: 2 x 10/100 Mbps (2 MACs, 2 IPs, RJ45 connectors)

Protection: 1.5 KV magnetic isolation

Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP, SNMP Trap, HTTP, SNTP

Serial Communication

Interface: 1 x RS-232/485 (9-pin D-Sub, male)

Parameters: N, 8, 1

Baudrate: 115,200 bps

Power Requirements

Power Input: 24 VDC nominal, 12 to 36 VDC

Power Consumption: 60 mA typical @ 24 VDC

Current for I/O Modules: Max. 1.5A @ 5 VDC

Field Power

Rated Voltage: 11 to 28.8 VDC, 24 VDC typical

Current in Field Power Contact: Max. 10 A

Isolation

System Power to I/O Driver: Optical isolation

Physical Characteristics

Dimensions: 45 x 99.8 x 70 mm

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

EMI: FCC part 15, CISPR (EN55022) Class A

EMS:
IEC 61000-4-2 (ESD), level 2/3
IEC 61000-4-3 (RS), level 2
IEC 61000-4-4 (EFT), level 2
IEC 61000-4-5 (Surge), level 3
IEC 61000-4-6 (CS), level 2
IEC 61000-4-8 (PM), level 1
IEC 61000-4-11 (DIP)
IEC 61000-6-2 (ESD), level 2/3
IEC 61000-6-4 (EFT), level 2

Safety: UL 508

Shock: IEC 60068-2-27

Freefall: IEC 60068-2-32

Vibration: IEC 60068-2-6

Note: Please check Moxa's website for the most up-to-date certification status.

Warranty

Warranty Period: 2 years

Details: See www.moxa.com/warranty

Ordering Information

Step 1: Select a network adaptor module

ioLogik E4200

Step 2: Select I/O modules

M-1000/2000/3000/4000/6000 Series

Step 3: Select power modules

Power Modules M-7001/7002/7804/7805

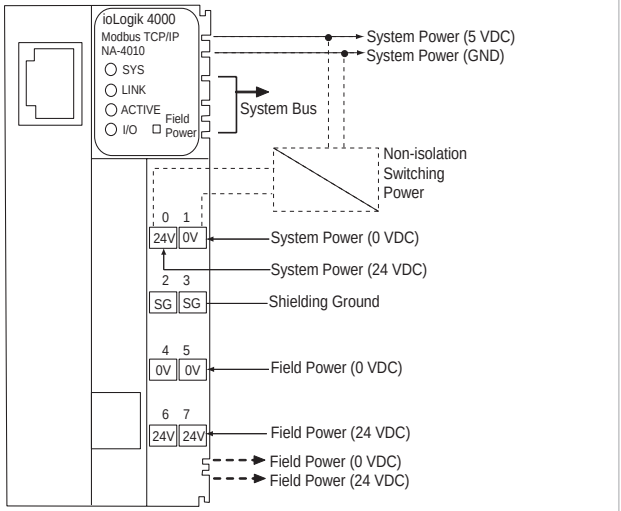
Available Models

ioLogik E4200: Active Ethernet network adaptor

Note: The ioLogik E4200 Active Ethernet network adaptor can be expanded by adding up to 16 I/O modules. See pages 5-33 to 5-41 to select the M-series modules for your application.

NA-4010

Ethernet network adaptor



The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Specifications

LAN

Ethernet: 1 x 10/100 Mbps, RJ45

Software Features

Protocols: Modbus/TCP, HTTP, Bootp

IP Settings: ARP, Bootp, static IP

Utility: ioAdmin

Programming Library: MXIO DLL library for Windows supporting Visual Basic, Visual C++, Borland C++ Builder, .NET

Number of I/O Modules Supported: Max. of 32

Power Requirements

Power Input: 11 to 28.8 VDC, 24 VDC typical

Power Consumption: 60 mA typical @ 24 VDC

Current for I/O Modules: Max. 1.5A @ 5 VDC

Field Power

Rated Voltage: 11 to 28.8 VDC, 24 VDC typical

Current in Field Power Contact: Max. 10 A

Isolation

System Power to I/O Driver: Optical isolation

Physical Characteristics

Dimensions: 42 x 99 x 70 mm (1.65 x 3.9 x 2.75 in)

Weight: 150 g

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

Safety: UL508

EMC: CE IEC 61000-6-2, IEC 61000-6-4

Vibration: IEC-68-2-6 (2 g's during operation)

Warranty

Warranty Period: 2 years

Details: See www.moxa.com/warranty

Ordering Information

Step 1: Select a network adaptor module

NA-4000 series

Step 2: Select I/O modules

M-1000/2000/3000/4000/6000 series

Step 3: Select power modules (optional)

M-7000 series

Available Models

NA-4010: Ethernet network adaptor (Modbus/TCP)

Note: The NA-4010 Ethernet network adaptor can be expanded by adding up to 32 I/O modules. See pages 5-33 to 5-41 to select the M- series modules for your application.

LDP1602 LCD Module

Snap-on module for the ioLogik 2000 and ioMirror 3000 series

- Hot-pluggable display module for ioLogik Active Ethernet I/O, serial I/O, and Peer-to-Peer I/O
- Easy, portable configuration kit for IP display and configuration
- Direct display for analog value and digital input, counter status
- No battery required (powered through the I/O)

The certification logos shown here apply to some or all of the products in this section. For details, see “Regulatory Approvals” under “Specifications” below.

Installing the LCD Module

1. Remove the ioLogik’s top cover.

2. Plug in the LCD module.

3. Check and configure the IP address.

4. Check IP and I/O status.

Specifications

LCD Screen: 16 x 2 text display (in English)
Operating Temperature: 0 to 55°C (32 to 131°F)
Storage Temperature: -20 to 70°C (-4 to 158°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Ordering Information

LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik W5340

Active GPRS I/O with 4 AIs, 8 DIOs, and 2 relay outputs

- GPRS, Ethernet LAN, RS-232/422/485 supported
- Smart Active GPRS connection
- Low power consumption
- Secure wake on call ID
- Active messaging with real-time stamp
- SNMP Trap with I/O status
- Data logging with SD card
- Unicode Active Messaging with real-time stamp, including SMS, SNMP Trap with I/O status, TCP, email
- ioAdmin and Active OPC Server supported
- Windows/WinCE VB/VC.NET and Linux C APIs

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Introduction

The ioLogik W5340 is designed for cellular remote monitoring and alarm systems, such as automated river monitoring and pipeline monitoring. The ioLogik W5000 series uses GPRS technology to maximize the coverage of remote monitoring applications. This kind of application needs cellular communications and I/O points connected to various sensors, including rainfall meters, flow meters, and water level detectors, since installing devices is usually difficult. They all enjoy the benefit of the GPRS communication feature of ioLogik W5340.

Specifications

Cellular

Interface: GPRS
Band Options: Quad-band 850/900/1800/1900 MHz
GPRS Multi-Slot Class: Class 10
GPRS Terminal Device Class: Class B
SMS: Point-to-Point Text/PDU
SIM Control Voltage: 3 V

LAN

Ethernet: 1 x 10/100 Mbps, RJ45
Protection: 1.5 KV magnetic isolation
Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP, SNTP

Serial Communication

Interface: 1 x RS-232/422/485, software selectable
(9-pin D-Sub, male or 5-contact terminal block)
Baudrate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps

Analog Input

Channels: 4 analog inputs with differential input
Resolution: 16 bits
I/O Mode: Voltage / Current
Input Range: 0 to 10 V, ±10 V, ±5 V, 0 to 20 mA, 4 to 20 mA
Accuracy:
• ±0.1% FSR @ 25°C
• ±0.3% FSR @ -10 and 55°C
Sampling Rate (all channels): 100 samples/sec
Input Impedance: 200K ohms (min.)
Built-in Resistor for Current Input: 102 ohms

DI/DO Configurable Channels

Channels: 8
I/O Mode:
• DI or Event Counter (up to 900 Hz)
• DO or Pulse Output (up to 100 Hz)

Digital Input

Channels: Up to 8, source/sink selectable
Sensor Type: NPN/PNP type
I/O Mode: DI or Event Counter (up to 900 Hz)
Dry Contact:
• Logic 0: short to GND
• Logic 1: open
Wet Contact: (For Source Type)
• Logic 0: 0 to 3 VDC
• Logic 1: 10 to 30 VDC (DI COM to DI)
Common Type: 4 points per COM
Isolation: 3K VDC or 2K Vrms
Counter/Frequency: 900 Hz, power off storage
Digital Filtering Time Interval: Software selectable
Over-voltage Protection: 36 VDC
Poweroff Counter Memory: 48 bytes

Digital Output

Channels: Up to 8, sink type, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output (up to 100 Hz)
Pulse Wave Width/Frequency: 10 ms/100 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 600 mA

Over-temperature Shutdown: 160°C
Output Current Rating: Max. 200 mA per channel
Isolation: 3K VDC or 2K Vrms

Relay Output

Channels: 2 Form A (N.O.) relay outputs, 5 A
Contact Rating: 5 A @ 30 VDC, 5 A @ 240 VAC, 5 A @ 110 VAC
Inductance Load: 2 A
Resistance Load: 5 A
Breakdown Voltage: 500 VAC
Relay On/Off Time: 10 ms, 5 ms (max.)
Initial Insulation Resistance: 1G min. @ 500 VDC
Expected Life: 100,000 times (Typical)
Initial Contact Resistance: 30 milli-ohms (max.)
Pulse Output: 20 operation times per minutes at rated load
Isolation: 3K VDC or 2K Vrms

Power Requirements

Power Input: 24 VDC nominal, 12 to 36 VDC
Power Consumption:
• GPRS Always On (Communication): 4.2 W

Environmental Limits

Operating Temperature: -10 to 55°C (14 to 131°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

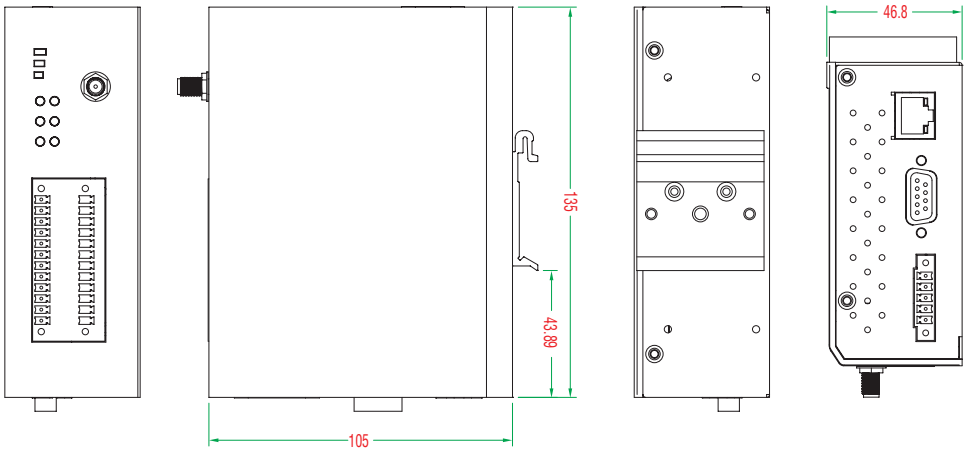
Regulatory Approvals

EMI: FCC part 15, CISPR (EN55022) Class A
EMS:
IEC 61000-4-2 (ESD), level 2/3
IEC 61000-4-3 (RS), level 2
IEC 61000-4-4 (EFT), level 2
IEC 61000-4-5 (Surge), level 3
IEC 61000-4-6 (CS), level 2
IEC 61000-4-8 (PM), level 1
IEC 61000-4-11 (DIP)
IEC 61000-6-2 (ESD), level 2/3
IEC 61000-6-4 (EFT), level 2
Safety: UL 508
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6
Note: Please check Moxa's website for the most up-to-date certification status.

Warranty

Warranty Period: 2 years
Details: See www.moxa.com/warranty

Dimensions (unit = mm)



Front View | Side View | Rear View | Top View

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AI0+	AI0-	AI1+	AI1-	DI_COM1	DIO0	DIO1	DIO2	DIO3	GND	RO_NO	R1_NO	AI2+	AI2-	AI3+	AI3-	DI_COM2	DIO4	DIO5	DIO6	DIO7	GND	RO_C	R1_C

Ordering Information

Available Models

ioLogik W5340: Active GPRS I/O device with 4 AIs, 8 DIOs, and 2 relay outputs

ioLogik R2110

RS-485 remote I/O with 12 digital inputs and 8 digital outputs

- 12-channel 24 VDC digital inputs with DI Event Counter mode, and software selectable filtering time
- 8-channel 24 VDC digital outputs with pulse output mode and software selectable pulse width
- LED indicators for all I/O channels
- Over-temperature protection (up to 175°C)
- Over-current protection (400-mA/channel)
- Easy-to-use, quick programming library for VB, VC++, BCB, .NET
- Firmware upgradable over RS-485

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Specifications

Digital Input

Channels: 12, source type
I/O Mode: DI or Event Counter (up to 50 Hz)
Dry Contact:
Logic 0: short to GND
Logic 1: open
Wet Contact:
Logic 0: 0 to 3 VDC
Logic 1: 10 to 30 VDC
(DI COM to DI)
Common Type: 12 points per COM
Isolation: 3K VDC or 2K Vrms

Digital Output

Channels: 8, sink type, 36 VDC, 200 mA
I/O Mode: DO or Pulse Output (up to 50 Hz)
Output Current Rating: Max. 200 mA per channel
Isolation: 3K VDC or 2K Vrms
Output Frequency: 50 Hz

Pin Assignment

I/O (left to right)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DI.COM	DI0	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8	DI9	DI10	DI11	DI.GND	DO.PWR	DO0	DO1	DO2	DO3	DO4	DO5	DO6	DO7	DO.GND

Ordering Information

ioLogik R2110: RS-485 remote I/O with 12 digital inputs and 8 digital outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

ioLogik R2140

RS-485 remote I/O with 8 analog inputs and 2 analog outputs

- 8 analog input channels for millivolts (mV), voltage, and current signal with wire-off detection (at 4 to 20 mA)
- 2-channel analog outputs for voltage, current actuator control
- 16-bit resolution analog inputs, 12-bit resolution analog output
- Easy-to-use, quick programming library for VB, VC++, BCB, .NET
- NIST-Traceability calibration for analog I/O channels
- Firmware upgradable over RS-485

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Specifications

Analog Input

Channels: 8, sink type, 45 VDC, 200 mA
Resolution: 16-bit
I/O Mode: Voltage / Current
Input Range: ±150 mV, ±500 mV, ±5 V, ±10 V, 0 to 20 mA, 4 to 20 mA
Data Format: 16-bit integer
Accuracy:
±0.1% FSR @ 25°C
±0.3% FSR @ -10 and 60°C
Sampling Rate (all channels):
10 samples/sec (voltage)
6 samples/sec (current)
Built-in Resistor for Current Input: 106 ohms
CMR @ 50/60 Hz: 95 dB min.
Isolation: 3K VDC or 2K Vrms

Analog Output

Channels: 2
Resolution: 12 bits
Output Range: 0 to 10 V, 4 to 20 mA
Drive Voltage: 15 VDC for current output
Accuracy:
±0.1% FSR @ 25°C,
±0.3% FSR @ -10 and 60°C
Zero Drift: ±9 μV/°C
Span Drift: ±25 ppm/°C
Load Resistor: Less than 250 ohms

Pin Assignment

I/O (left to right)

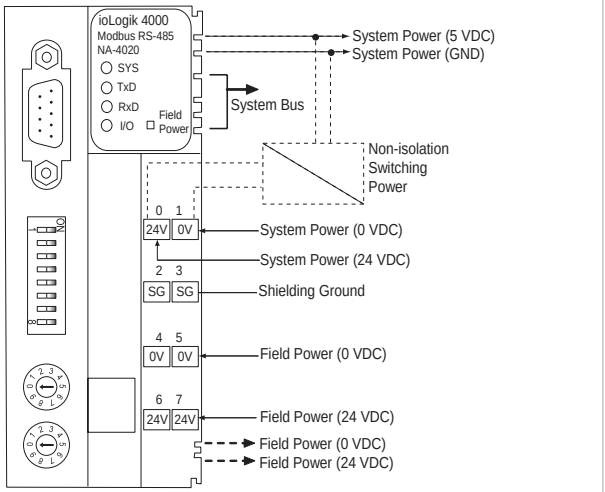
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Vin0+	Vin0-	Vin1+	Vin1-	Vin2+	Vin2-	Vin3+	Vin3-	Vin4+	Vin4-	Vin5+	Vin5-	Vin6+	Vin6-	Vin7+	Vin7-	Vout0+	Vout0-	Iout0+	Iout0-	Vout1+	Vout1-	Iout1+	Iout1-

Ordering Information

ioLogik R2140: RS-485 remote I/O with 8 analog inputs and 2 analog outputs
LDP1602: LCD module with 16 x 2 text display and 5 buttons

NA-4020/4021

RS-485 or RS-232 network adaptors



The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

Specifications

Serial Communication Parameters

Parity: None, Even, Odd

Data Bits: 7, 8

Stop Bits: 1, 2

Baudrate: 1200 to 115200 bps

Signals:

• NA-4020: Data+, Data-, Gnd, DIR
• NA-4021: TxD, RxD, Gnd

Software Features

Protocols: Modbus/RTU, Modbus/ASCII

Modbus Address: 00 to 99 (set by rotary switches)

Utility: ioAdmin

Programming Library: MXIO DLL library for Windows; Supports Visual Basic, Visual C++, Borland C++ Builder

Number of I/O Modules Supported: Max. of 32

Power Requirements

Power Input: 11 to 28.8 VDC, 24 VDC typical

Power Consumption: 70 mA typical @ 24 VDC

Current for I/O Modules: Max. 1.5 A @ 5 VDC

Field Power

Rated Voltage: 11 to 28.8 VDC, 24 VDC typical

Current in Field Power Contact: Max. 10 A

Isolation

System Power to I/O Driver: Optical isolation

Physical Characteristics

Dimensions: 42 x 99 x 70 mm (1.65 x 3.9 x 2.75 in)

Weight: 150 g

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

Safety: UL508

EMC: CE IEC 61000-6-2, IEC 61000-6-4

Vibration: IEC-68-2-6 (2 g's during operation)

Warranty

Warranty Period: 2 years

Details: See www.moxa.com/warranty

Ordering Information

Step 1: Select a network adaptor module

NA-4000 series

Step 2: Select I/O modules

M-1000/2000/3000/4000/6000 series

Step 3: Select power modules (optional)

M-7000 series

Available Models

NA-4020: RS-485 network adaptor (Modbus)

NA-4021: RS-232 network adaptor (Modbus)

Note: The NA-4020/4021 RS-485/232 network adaptors can be expanded by adding up to 32 I/O modules. See pages 5-33 to 5-41 to select the M- series modules for your application.

Modular Remote I/O Selection Guide

I/O Modules

	DC-Digital Inputs					AC-Digital Inputs	
Specs	Model	M-1800	M-1801	M-1600	M-1601	M-1450	M-1451
	Channels	8	8	16	16	4	4
	Sink/Source	Sink	Source	Sink	Source	---	---
	Connector	RTB	RTB	20-pin	20-pin	RTB	RTB
	Voltage	24 VDC	24 VDC	24 VDC	24 VDC	110 VAC	220 VAC
	Isolation	Optical isolation					

	Digital Outputs					
Specs	Model	M-2800	M-2801	M-2600	M-2601	M-2450
	Channels	8	8	16	16	4
	Sink/Source	Sink	Source	Sink	Source	Relay
	Connector	RTB	RTB	20-pin	20-pin	RTB
	Voltage	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
	Current	0.5 A	0.5 A	0.3 A	0.3A	0.5 A
	Isolation	Optical isolation				

	Analog Inputs				
Specs	Model	M-3802	M-3810	M-6200	M-6201
	Channels	8	8	2	2
	Current	4 to 20 mA	---	---	---
	Voltage	---	0 to 10V	---	---
	Connector	RTB	RTB	RTB	RTB
	Resolution	12-bit	12-bit	---	---
	Isolation	Optical isolation			
	Sensor Input	---	---	RTD(ohm)	Thermo-couple (mV)

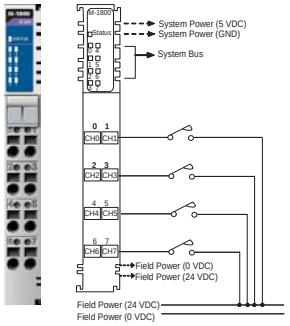
	Analog Outputs		
Specs	Model	M-4402	M-4410
	Channels	4	4
	Current	4 to 20 mA	---
	Voltage	---	0 to 10 V
	Connector	RTB	RTB
	Resolution	12-bit	12-bit
	Isolation	Optical isolation	

Power Modules

	Power Modules				
Specs	Model	M-7001	M-7002	M-7804	M-7805
	Channels	0	0	8	8
	Voltage	24 VDC	DC: 5, 24, 48 VDC AC: 110/220 VAC	0 VDC	24 VDC
	Purpose	System Power	Field Power	Field Power	Field Power

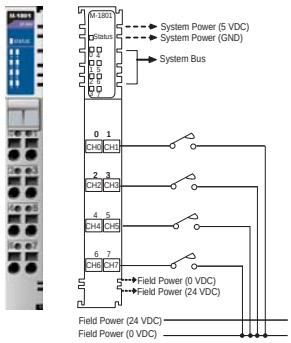
Digital Input Modules

8-channel 24 VDC digital input modules



M-1800: 8 digital inputs, sink, 24 VDC

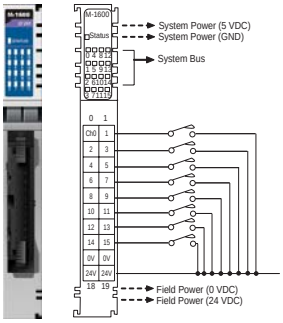
Inputs per Module: 8 channels, sink type
On-state Voltage: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
Min. Off-state Voltage: Max. 5 VDC
On-state Current: Max. 6 mA/point @ 28.8 VDC
Input Impedance: Typ. 5.1K ohms
Filtering Time: Typ. 1.5 ms
Common Type: External common
Power Consumption: Max. 35 mA @ 5 VDC



M-1801: 8 digital inputs, source, 24 VDC

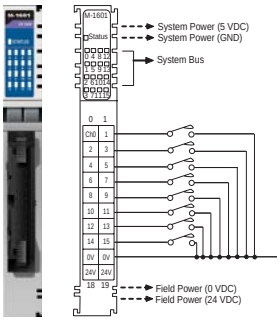
Inputs per Module: 8 channels, source type
On-state Voltage: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
Min. Off-state Voltage: Max. 5 VDC
On-state Current: Max. 6 mA/point @ 28.8 VDC
Input Impedance: Typ. 5.1K ohms
Filtering Time: Typ 1.5 ms
Common Type: External common
Power Consumption: Max. 35 mA @ 5 VDC

16-channel 24 VDC digital input modules



M-1600: 16 digital inputs, sink, 24 VDC

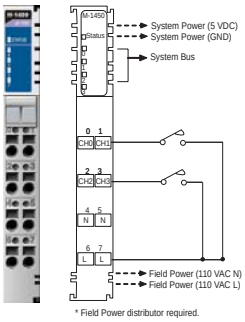
Inputs per Module: 16 channels, sink type
On-state Voltage: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
Min. Off-state Voltage: Max. 5 VDC
On-state Current: Max. 6 mA/point @ 28.8 VDC
Input Impedance: Typ. 5.1K ohms
Filtering Time: Typ. 1.5 ms
Common Type: 16 channels for 2 COMs
Power Consumption: Max. 40 mA @ 5 VDC



M-1601: 16 digital inputs, source, 24 VDC

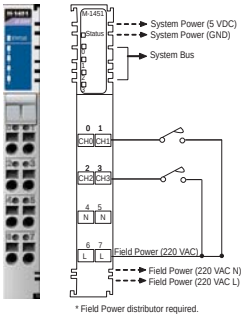
Inputs per Module: 16 channels, source type
On-state Voltage: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
Min. Off-state Voltage: Max. 5 VDC
On-state Current: Max. 6 mA/point @ 28.8 VDC
Input Impedance: Typ. 5.1K ohms
Filtering Time: Typ. 1.5 ms
Common Type: 16 channels for 2 COMs
Power Consumption: Max. 40 mA @ 5 VDC

4-channel AC digital input modules



M-1450: 4 digital inputs, 110 VAC

Inputs per Module: 4 channels
On-state Voltage: 120 VAC nominal, min. 85 VAC to max. 132 VAC
Min. Off-state Voltage: Max. 45 VAC
On-state Current: Max. 8 mA/point @ 132 VAC
Input Impedance: Typ. 11K ohms
Common Type: 4 channels for 2 COMs (single common)
Power Consumption: Max. 35 mA @ 5 VDC



M-1451: 4 digital inputs, 220 VAC

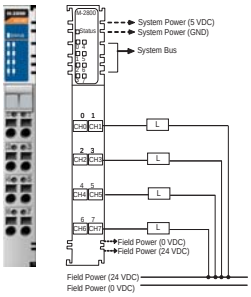
Inputs per Module: 4 channels
On-state Voltage: 240 VAC nominal, min. 170 VAC to max. 264 VAC
Min. Off-state Voltage: Max. 45 VAC
On-state Current: Max. 12 mA/point @ 264 VAC
Input Impedance: Typ. 22K ohms
Common Type: 4 channels for 2 COMs (single common)
Power Consumption: Max. 35 mA @ 5 VDC

Ordering Information

		DC-Digital Input Modules				AC-Digital Input Modules	
Specs	Model	M-1800	M-1801	M-1600	M-1601	M-1450	M-1451
	Channels	8	8	16	16	4	4
	Sink/Source	Sink	Source	Sink	Source	---	---
	Connector	RTB	RTB	20-pin	20-pin	RTB	RTB
	Voltage	24 VDC	24 VDC	24 VDC	24 VDC	110 VAC	220 VAC
	Isolation	Optical Isolation					

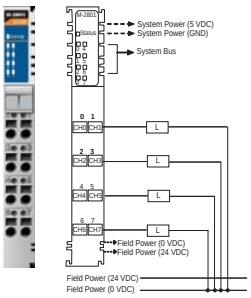
Digital Output Modules

8-channel 24 VDC digital output modules



M-2800: 8 digital outputs, sink, 24 VDC, 0.5 A

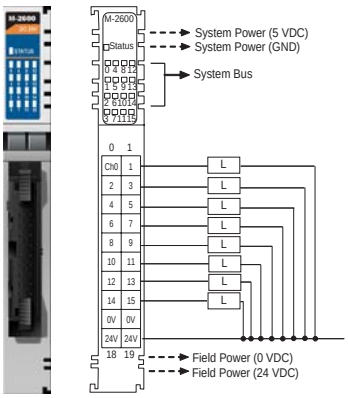
Outputs per Module: 8 channels, sink type
Output Voltage Range: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
On-state Voltage Drop: Max. 0.3 VDC @ 25°C
On-state Current: Min. 1 mA per channel
Off Leakage Current: Max. 50 μA
Output Current Rating: Max. 0.5 A per channel
Common Type: 8 channels per external common (single common)
Power Consumption: Max. 60 mA @ 5 VDC



M-2801: 8 digital outputs, source, 24 VDC, 0.5 A

Outputs per Module: 8 channels, source type
Output Voltage Range: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
On-state Voltage Drop: Max. 0.3 VDC @ 25°C
On-state Current: Min. 1 mA per channel
Off Leakage Current: Max. 50 μA
Output Current Rating: Max. 0.5 A per channel
Common Type: 8 channels per external common (single common)
Power Consumption: Max. 60 mA @ 5 VDC

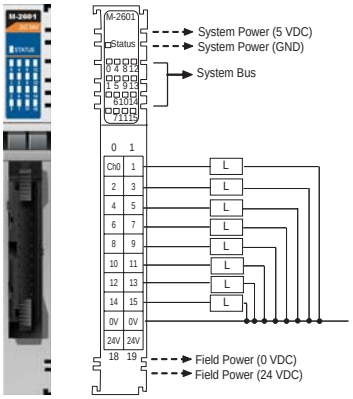
16-channel digital output modules



M-2600: 16 digital outputs, sink, 24 VDC, 0.3 A

Outputs per Module: 16 channels, sink type
Output Voltage Range: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC
On-state Voltage Drop: Max. 0.3 VDC @ 25°C
On-state Current: Min. 1 mA per channel
Off Leakage Current: Max. 50 μA
Output Current Rating:
- Max. 0.3 A per channel
- Max. 4 A per common

Common Type: 16 channels for 2 COMs (single common)
Power Consumption: Max. 80 mA @ 5 VDC



M-2601: 16 digital outputs, source, 24 VDC, 0.3 A

Outputs per Module: 16 channels, source type

Output Voltage Range: 24 VDC nominal, min. 11 VDC to max. 28.8 VDC

On-state Voltage Drop: Max. 0.3 VDC @ 25°C

On-state Current: Min. 1 mA per channel

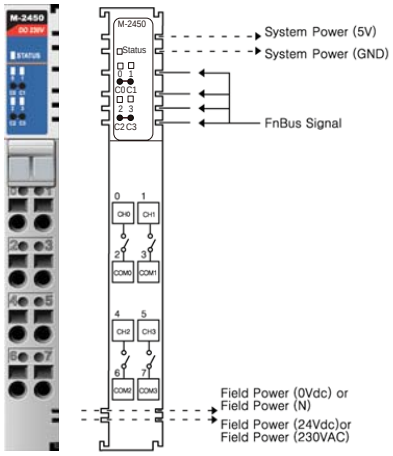
Off Leakage Current: Max. 50 μA

Output Current Rating:
- Max. 0.3 A per channel
- Max. 4 A per common

Common Type: 16 channels for 2 COMs (single common)

Power Consumption: Max. 80 mA @ 5 VDC

4-channel relay output modules



M-2450: 4 relay outputs, 24-VDC/230-VAC, 2 A

Outputs per Module: 2 channels, relay

Relay Type:
- Form A, Normally Open (N.O.)
- Single Pole, Single Throw (SPST)

Output Voltage Range: Load dependent
- 5 to 28.8 VDC @ 2 A resistive
- 48 VDC @ 0.8 A resistive
- 110 VDC @ 0.3 A resistive
- 250 VAC @ 2 A resistive

Output Current Rating: At rated power
- 2 A @ 5 to 28.8 VDC
- 0.8 A @ 48 VDC
- 0.5 A @ 110 VDC
- 2 A @ 250 VAC

Min. Load: 100 μA, 100 m VDC per point

Max. On-state Voltage Drop: 0.5 V @ 2 A, resistive load, 24 VDC

Off-state Leakage Current: Max. 1.5 mA

Common Type: 1 channel for 1 COM

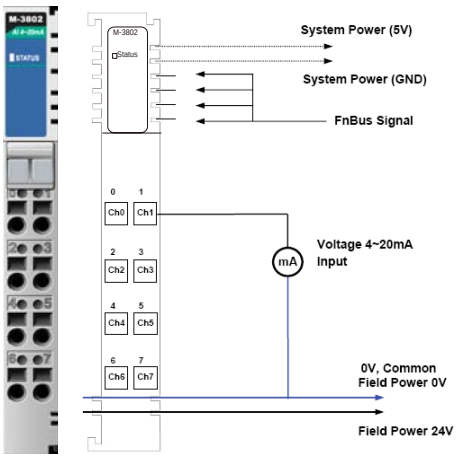
Power Consumption: Max. 65 mA @ 5 VDC

Ordering Information

Digital Output Modules						
Specs	Model	M-2800	M-2801	M-2600	M-2601	M-2450
	Channels	8	8	16	16	4
	Sink/Source	Sink	Source	Sink	Source	Relay
	Connector	RTB	RTB	20-pin	20-pin	RTB
	Voltage	24 VDC	24 VDC	24 VDC	24 VDC	230 VAC/ 24 VDC
	Current	0.5A	0.5A	0.3A	0.3A	2.0A
	Isolation	Optical isolation				
	Diagnostics	---	---	---	---	---

Analog Input Modules

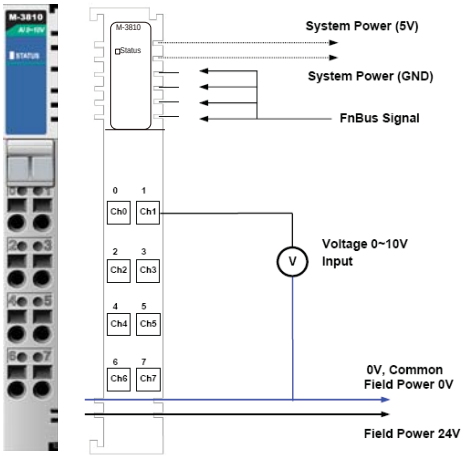
8-channel analog input modules, 12-bit resolution



M-3802: 8 analog inputs, 4 to 20 mA, 12 bits

Resolution in Ranges: 12 bits, 3.91 μA/bit
Input Current Range: 0 to 20 mA
Data Format: 16-bit integer (2's complement)
Accuracy:
- ±0.1%, FSR @ 25°C
- ±0.3%, FSR @ 0°C, 60°C

Input Impedance: 120 ohms
Conversion Time: 4 ms for all channels
Power Consumption: Max. 150 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. AWG14



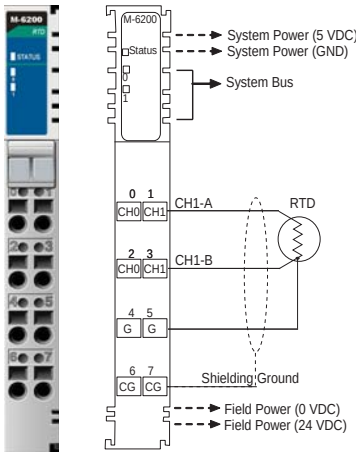
M-3810: 8 analog inputs, 0 to 10 V, 12 bits

Resolution in Ranges: 12 bits, 2.44 mV/bit
Input Current Range: 0 to 10 VDC
Data Format: 16-bit integer (2's complement)
Accuracy:
- ±0.1%, FSR @ 25°C
- ±0.3%, FSR @ 0°C, 60°C

Input Impedance: 500K ohms
Conversion Time: 4 ms for all channels
Power Consumption: Max. 150 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. AWG14

Temperature Input Modules

2-channel temperature input modules, RTD or thermocouple input



M-6200: 2 analog inputs, RTD: PT100, JPT100

Sensor Types:
- PT50, PT100, PT200, PT500, PT1000 (resistance 100 milli-ohms/bit)
- JPT100, JPT200, JPT500, JPT1000 (resistance 10 milli-ohms/bit)
- NI100, NI200, NI500, NI1000, NI120, CU10 (resistance 20 milli-ohms/bit)

Resolution: 0.1°C/10 milli-ohms

Data Format: 16-bit integer (2's complement)

Accuracy:
- ±0.1%, FSR @ 25°C
- ±0.3%, FSR @ 0°C, 60°C

Input Impedance: 500K ohms

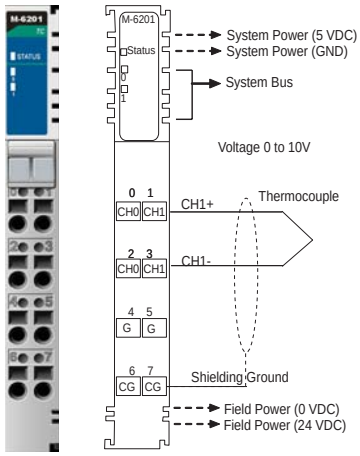
Conversion Time: 200 ms for all channels

Diagnostics: Range over (if range over, data=Dx8000)

Power Consumption: Max. 80 mA @ 5 VDC

Isolation: I/O to logic (photocoupler isolation)

Wiring: I/O cable max. AWG14



M-6201: 2 analog inputs, thermocouple

Sensor Types:
Type J/K/T/E/R/S/B/N/L/U/C/D
(mV input 10 µV/bit, 2 µV/bit)

Resolution: 0.1°C/10 µV

Data Format: 16-bit integer (2's complement)

Accuracy:
- ±0.1%, FSR @ 25°C
- ±0.3%, FSR @ 0°C, 60°C

Input Impedance: 500K ohms

Conversion Time: 200 ms for all channels

Diagnostics: Range over (if range over, data=Dx8000)

Power Consumption: Max. 80 mA @ 5 VDC

Isolation: I/O to logic (photocoupler isolation)

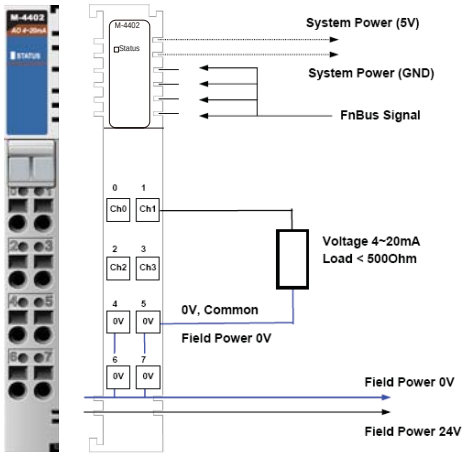
Wiring: I/O cable max. AWG14

Ordering Information

Analog Input Modules					
Specs	Model	M-3802	M-3810	M-6200	M-6201
	Channels	8	8	2	2
	Current	4 to 20 mA	---	---	---
	Voltage	–	0 to 10V	---	---
	Connector	RTB	RTB	RTB	RTB
	Resolution	12-bit	12-bit	---	---
	Isolation	Optical isolation			
	Sensor Input	---	---	RTD (ohm)	Thermo-couple (mV)

Analog Output Modules

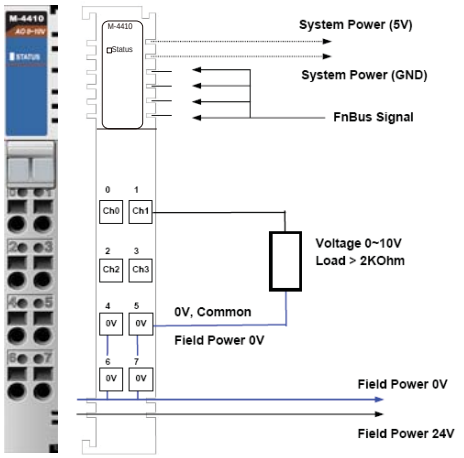
4-channel analog output modules, 12-bit resolution



M-4402: 4 analog outputs, 4 to 20 mA, 12 bits

Resolution in Ranges: 12 bits, 3.91 μA/bit
Output Current Range: 4 to 20 mA
Data Format: 16-bit integer (2's complement)
Accuracy:
- ±0.1%, FSR @ 25°C
- ±0.3%, FSR @ 0°C, 60°C

Output Impedance: Max. 500 ohms
Conversion Time: 2 ms for all channels
Power Consumption: Max. 65 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. AWG14



M-4410: 4 analog outputs, 0 to 10 V, 12 bits

Resolution in Ranges: 12 bits, 2.44 mV/bit
Output Current Range: 0 to 10 VDC
Data Format: 16-bit integer (2's complement)
Accuracy:
- ±0.1%, FSR @ 25°C
- ±0.3%, FSR @ 0°C, 60°C

Output Impedance: Max. 5K ohms
Conversion Time: 2 ms for all channels
Power Consumption: Max. 200 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. AWG14

Ordering Information

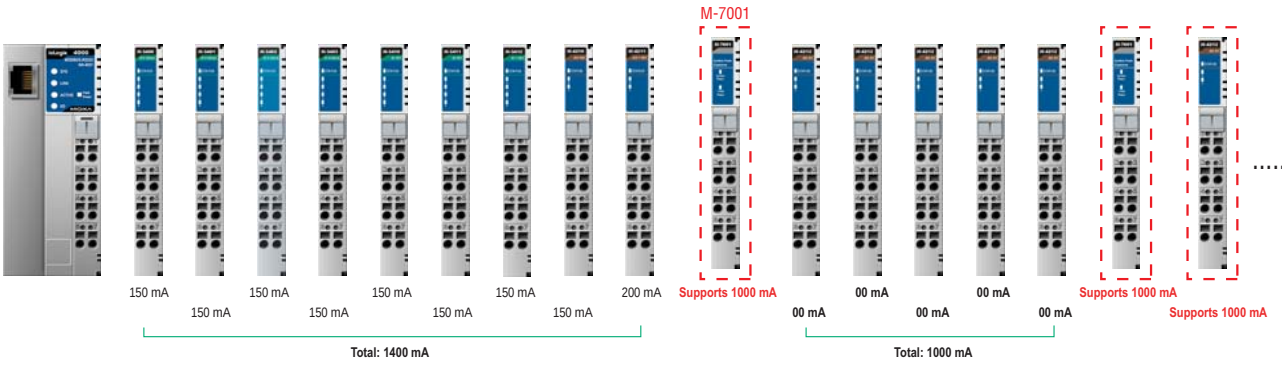
Analog Output Modules			
Specs	Model	M-4402	M-4410
	Channels	4	4
	Current	4 to 20 mA	---
	Voltage	---	0 to 10V
	Connector	RTB	RTB
	Resolution	12-bit	12-bit
	Isolation	Optical Isolation	

Power Modules

When to Use a Power Module

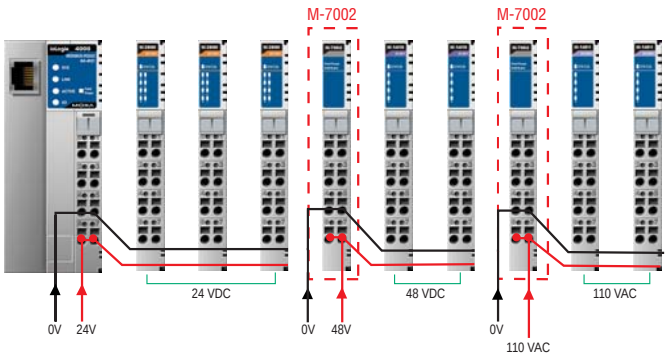
System Power Distributor

The system power expansion module is designed to provide extra power for connected I/O expansion modules. Each NA-4000 series network adaptor can provide 1.5 A @ 5 VDC. If you need more power for your installed I/O expansion modules, you will need to use an M-7001 module. However, note that the M-7001 can only provide 1.5 A @ 5 VDC.



Field Power Distributor

The field power distributor is designed to isolate different field voltages. For example, before you connect a 48 VDC or 110 VAC DI/O module to a 24 VDC DI/O module, you will need an M-7002 field power distributor.

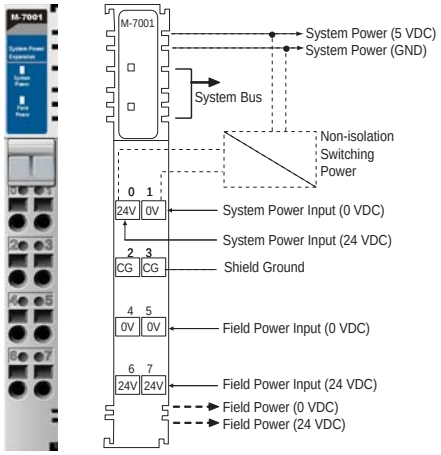


Potential Power Distributor

There are three types of potential distributor modules that provide extra wiring points, such as shielding ground, 0 V field power, and 24 V field power. For example, the 8-channel digital input (sink type) module by itself does not have a 24 V wiring point. In this case, you can add an M-7805 for easier wiring.

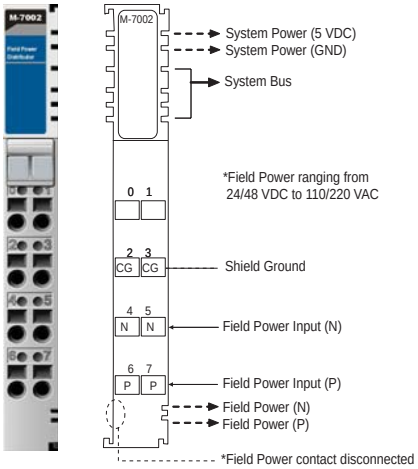
Power Modules

M-7001: System power module



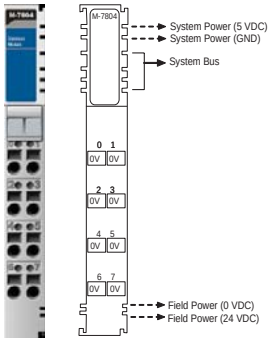
- **System Input Voltage:** 24 VDC, 11 to 28.8 VDC
- **Field Power Input Voltage:** 24 VDC (±20%)
- **Current for I/O Modules:** 1.5 A @ 5 VDC (Max.)
- **System Bus Output Voltage:** 5 VDC (Max.)
- **Field Power Contacts Current:** 10 A (Max.)

M-7002: Field power module



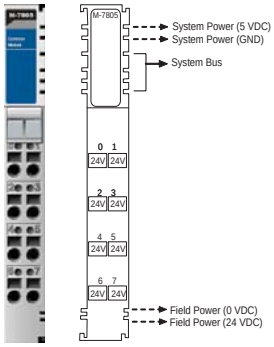
- **Field Power Input Voltage:**
  DC: 5 VDC, 24 VDC, 48 VDC
  AC: 110 VAC, 220 VAC
- **Current for Field Power Contacts:** 10 A (Max.)

M-7804: 0 VDC



Channels: 8
Mode: 0 VDC

M-7805: 24 VDC



Channels: 8
Mode: 24 VDC

Ordering Information

Power Modules					
Specs	Model	M-7001	M-7002	M-7804	M-7805
	Channels	0	0	8	8
	Voltage	24 VDC	DC: 5, 24, 48 VDC AC: 110/220 VAC	0 VDC	24 VDC
	Purpose	System Power	Field Power	Field Power	Field Power

Modular I/O Accessories

TB 1600 DIN-Rail mounting screw terminal module with 20-pin connector

- 20 pins, one-to-one assignment
- Connector pitch: 3.81 mm
- DIN-Rail mounting type
- Dimensions: 77.5 x 67.5 x 51 mm (3.05 x 2.66 x 2.01 in)
- RoHS compliant

20-to-20-pin flat cable

- Connects between the TB 1600 and ioLogik 4000 series
- Length: 500 mm
- Number of Pins: 20

M-8001-PK Removable terminal block

- Terminal block for the ioLogik 4000 series
- Packaging: 9 pcs in one box

M-8003-PK Marker with 0 to 9 numbering

M-8004-PK Blank marker

- Marker for the ioLogik 4000 series
- Packaging: 100 pcs in one box

Ordering Information

- **TB 1600:** DIN-Rail mounting screw terminal module with 20-pin connector
- **20-to-20-pin flate cable:** 20-pin to 20-pin flat cable, 500 mm
- **M-8001-PK:** Removable terminal block, 9 pcs per pack
- **M-8003-PK:** Marker with 0 to 9 numbering, white color, 100 pcs
- **M-8004-PK:** Blank marker, 100 pcs