## Remote I/O

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Efficient and Intelligent Ethernet I/O

Real-time Remote Monitoring & Alarms

Turbo Ring < 20 ms

Fiber Optic Cable (100BaseFX or 1000BaseSX/LX/LHX/ZX)
Twisted Pair Cable (10/100BaseT(X))
RS-485 Serial Cable
ioLogik E2000 Active Ethernet I/O
New Generation I/O that Talks over Ethernet

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

Why Choose Active Ethernet I/O?

Click&Go for reduced configuration time
- Local logic control with no learning curve, no third-party programming, and no maintenance fees
- Dramatic reduction in project implementation time

MXIO DLL library for easier programming
- No Modbus addressing required
- VB and VC for Windows support
- Various options for Windows, WinCE, and Linux platforms

Four advantages to Active Ethernet I/O
- Saves network bandwidth compared with polling methods
- Off-line local control without a host
- Easy SNMP trap with I/O status
- Real-time event time stamp

Built-in web console for configuration and monitoring
- Configure network parameters
- Set up the I/O Mode
- Monitor the I/O status and values
Remote Monitoring Solutions

The Most User-friendly I/O for Remote Monitoring and Alarm Applications

Best Companion for PCs and Embedded Computers

Unlike traditional remote I/O, the ioLogik remote I/O server is designed for a PC environment. The LCD module, Windows utility with documentation, and MXIO DLL library are designed especially for PC-based automation applications.

Unique LCD Module for PC-free Management

The ioLogik 2000 series of stand-alone remote I/O servers can be used with an optional, snap-on LCD module for on-site management and configuration. This unique display module can display network and I/O settings, and you can change network settings to ensure speedy installation and maintenance.

Intuitive Windows Utility

ioLogik remote I/O servers 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.

Online Documentation

In addition to providing easy-to-use utilities, ioLogik remote I/O servers also come with an online wiring guide to help you troubleshoot problems easily without needing to refer to the manual. The online guide lists key features of I/O points, and displays a conversion table for analog input/output points.

Remote Monitoring over TCP/IP Networks

The ioLogik Ethernet remote I/O Server allows you to monitor the status of all I/O connections remotely over a TCP/IP network, allowing you to save the cost and time associated with traveling to and from your remote sites.
Most Applications Can Use Active Ethernet I/O

Active Ethernet I/O is an ideal solution for applications in remote monitoring, data collection, asset/environment control, and notification:

- Server rooms for temperature and humidity control, back-up power supply initiation, and more
- Buildings, shopping-centers, and airports for temperature and humidity control
- Roadside cabinets for telecommunication/power industries
- Air-conditioning and heating unit supervision

- Tank level monitoring and pump control
- Door and window sensors in airports and museums
- Warehouse temperature and humidity control
- Medical storage
- Food and chemical industry
- Shopping mall visitor tracking

There are many ways that Active Ethernet I/O can be used to enhance your existing applications, improve your system’s cost effectiveness, or help you develop new, more powerful applications.

Instant Event Reporting by Input Status

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

Active Ethernet I/O can be configured for SNMP management of I/O control and reporting. Customized SNMP traps can be triggered by I/O events, such as turning on a light switch. SNMP software can be used for sophisticated automation, monitoring, and control of sensors and switches over Ethernet.

Local Alarm & I/O Control

- Supports SNMP read/write/trap
- Supports I/O control using SNMP management software

An Active Ethernet I/O server 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 simple If/Then statements, and no programming is required.

Liquid Heating System with ioLogik E2260

- Transmit “Active Message” based on average
- Local control of heater through DO channel

ioLogik temperature I/O brings intelligence to temperature sensors. It is equipped with virtual channels that are available for calculating the average temperature of each channel, and the difference between two physical channels. Note that a controller or PC is NOT required.
## Wiring Examples for Active Ethernet I/O

### Digital Input

**Digital Input (Dry Contact)**

Applies to these I/O models: E2210, E2212, R2110

**DI Wet Contact - Source Type**

Applies to these I/O models: E2210, E2212, E2214, R2110

**DI Contact - Sink Type**

Applies to these I/O models: E2214

### Digital and Relay Output

**Digital Output**

Applies to these I/O models: E2210, E2212, E2214, R2110, E2242, E2260, E2262

**Relay Output**

Applies to these I/O models: E2214

### Analog Input and Output

**Analog Input**

Applies to these I/O models: E2240, E2242, R2140

**Analog Output**

Applies to these I/O models: E2240, R2140

### Temperature Input

**RTD Input (2-Wire RTD)**

Applies to these I/O models: E2260

**RTD Input (3-Wire RTD)**

Applies to these I/O models: E2260

**Thermocouple Input**

Applies to these I/O models: E2262
Common Specifications for ioLogik Active Ethernet I/O

LAN
Ethernet: 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, SNTP

Serial
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
Speed: 1200 to 115200 bps
Protocol: Modbus/RTU

Power Requirements
Power Input: 24 VDC nominal, 12 to 48 VDC
DO Power: 24 VDC nominal, up to 30 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)

Agency Approvals
FCC: Part 15, CISPR (EN55022) Class A
CE: IEC 61000-4, IEC 61000-6
Safety: UL 508
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6
Warranty: 2 years (see www.moxa.com/warranty for details)

Dimensions (unit = mm)

Selection Guide for Active Ethernet I/O

<table>
<thead>
<tr>
<th>I/O Model</th>
<th>DI</th>
<th>AI</th>
<th>RTD</th>
<th>TC</th>
<th>DO</th>
<th>Relay</th>
<th>AO</th>
<th>DIO</th>
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<tr>
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</tbody>
</table>
ioLogik E2210

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

Introduction

Simple Applications without Programming
The ioLogik E2210 can convert a trigger event result directly into 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 the output can be independently configured for DO or pulse output mode.

Specifications

Digital Input
- Inputs: 12, source type
- 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

Digital Output
- Outputs: 8, sink type
- I/O Mode: DO or pulse output (up to 100 Hz)
- On-state Voltage: 24 VDC nominal
- Output Current Rating: Max. 200 mA per channel
- Isolation: 3K VDC or 2K Vrms
- Protection:
  - Over-temperature shutdown: Min. 175°C
  - Over-current limit: typ. 400 mA/channel

Pin Assignment

I/O (left to right)

<table>
<thead>
<tr>
<th>I/O</th>
<th>1</th>
<th>2</th>
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<tr>
<td>DI</td>
<td>00</td>
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<td>06</td>
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<tr>
<td>DO</td>
<td>DI COM</td>
<td>D0</td>
<td>D1</td>
<td>D2</td>
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<td>D20</td>
<td>D21</td>
<td>D22</td>
</tr>
</tbody>
</table>

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

Select digital I/O combination by software
Accepts PNP or NPN sensors
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 and WinCE VB/VC, and Linux C APIs
Peer-to-Peer I/O without controller

Introduction

Versatile 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 Types of Sensors
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 fixed points
- 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:
  - Logic 0: 0 to 3 VDC
  - Logic 1: 10 to 30 VDC
- Common Type: 6 points per COM
- Isolation: 3K VDC or 2K Vrms
- Low Speed Counter/Frequency: 900 Hz, power off storage

Digital Output
- Channels: 8 fixed points sink, 45 VDC, 200 mA
- Magnetic Isolation: 2K Vrms or 3K VDC
- Pulse Wave Width: 10 ms/100 Hz
- Over-voltage Protection: +45 VDC
- Over-current Limit: 400 mA (typical)
- Over-temperature Shutdown: 175°C (min.)

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)

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
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 status open)
> Relay specifications: 5A/250 VAC, 5A/30 VDC
> Instant event messaging by TCP, UDP, e-mail, SNMP trap
> Saves DI and relay counter when the power is 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 and WinCE VB/VC, and Linux C APIs
> I/O control over Modbus/TCP and SNMP protocol

Introduction

Saves relay counter when the power is off

The ioLogik E2214 is designed to record the how many times the built-in relay output is used. Even in the event of a sudden power failure, the E2214 will still be able to record the last count to its internal storage, before the power is completely shut off.

Specifications

Digital Input
- Input: 6 fixed points
- 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:
  - Logic 0: 0 to 3 VDC
  - Logic 1: 10 to 30 VDC
- Common Type: 6 points /2 COM
- Isolation: 2K VDC or 3K Vrms
- Counter Frequency: 900 Hz
- Digital Filtering Time Interval: 10 ms

Over-voltage Protection: +36 VDC
Relay Counter Saving: Yes

Digital Output
- 6-Channel 5A, FormA (N.O.) Relay Output
- Relay Specification:
  - Contact Rating: 5A @ 30 VDC, 5A @ 240 VAC, 5A @ 110 VAC
  - Inductance Load: 2A
  - Resistance Load: 5A
  - Breakdown Voltage: 500 VAC
  - Relay On/Off Time: 10ms, 5ms (Max.)
  - Initial Insulation Resistance: 1G min. @ 500 VDC
  - Expected Life: 100,000 times (Typical)
  - Initial Contact Resistance: 30m Ohm (Max.)
  - Pulse Output: 20 operations per minute at rated load
  - Isolation: 3K VDC or 2K Vrms

Pin Assignment

<table>
<thead>
<tr>
<th>I/O (left to right)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24</td>
</tr>
<tr>
<td>DI COM</td>
</tr>
</tbody>
</table>

DI Group 1

DI Group 2

Relays 0 to 5

Ordering Information

ioLogik E2214: Active Ethernet I/O with 6 digital inputs and 6 relays
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

- Easy-to-use Click&Go™ Logic for local output control
- 8-channel analog input voltage, current signal
- 2-channel analog output for voltage, current actuator control
- PC-based configuration utility and web console
- Windows and WinCE VB/VC, and Linux C APIs
- I/O control over Modbus/TCP and SNMP protocol
- NIST-traceable calibration

**Introduction**

**Combination of Analog Input and Output**

The ioLogik E2240 provides a combination of analog input and output in one module. The sensors and actuators it supports include pH, conductivity, pressure, flow, and valves.

### Specifications

**Analog Input**

- Inputs: 8
- Resolution: 16-bit
- 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 (voltage)
  - 6 samples/sec (current)
- Input Impedance: 900K ohms
- Built-in Resistor for Current Input: 106 ohm
- CMR @ 50/60 Hz: 95 dB min.
- Zero Drift: ±9 µV/°C

**Analog Output**

- Outputs: 2
- Resolution: 12-bit
- Output Range: 0 to 10V, 4 to 20 mA
- Drive Voltage: 15 VDC for current output
- Data Format: 12 bits
- Accuracy: ±0.1% FSR @ 25°C, ±0.3% FSR @ -10 and 60°C
- Zero Drift: ±9 µV/°C
- Span Drift: ±25 ppm/°C
- Isolation: 3K VDC or 2K Vrms
- Load Resistor: < 250 ohms

**Pin Assignment**

I/O (left to right)

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<thead>
<tr>
<th>1</th>
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<tr>
<td>Vin0+</td>
<td>Vin0-</td>
<td>Vin1+</td>
<td>Vin1-</td>
<td>Vin2+</td>
<td>Vin2-</td>
<td>Vin3+</td>
<td>Vin3-</td>
<td>Vin4+</td>
<td>Vin4-</td>
<td>Vin5+</td>
<td>Vin5-</td>
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<td>Vout1-</td>
<td>Iout1+</td>
<td>Iout1-</td>
</tr>
</tbody>
</table>

**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
Remote Monitoring Solutions

**ioLogik E2242**

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

- 4 fixed differential analog input channels
- 12 configurable digital input/output channels
- Instant event messaging by TCP, UDP, e-mail, SNMP Trap
- Adjustable sampling rate
- PC-based configuration utility and web console
- Easy-to-use Click&Go™ Logic for local output control
- I/O control over Modbus/TCP and SNMP protocol
- NIST traceable calibration

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**Introduction**

**Better I/O matrix for Al Monitoring**

The ioLogik E2242 is designed for Al monitoring and alarms, such as is used for water tank monitoring. The I/O combination provided by the ioLogik E2242 allows one Al channel to trigger up to 3 digital outputs for “Low, High” and “High, High” alarm points.

**Front End Signal Conditioner**

The ioLogik E2242 works with PLCs by using its digital output to reduce the loading from the PLC’s Al. The ioLogik E2242 also acts as a backup for the main control system.

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**Specifications**

**Analog Input Channels**

- Channels: 4, differential input
- Resolution: 16-bit
- I/O Mode: 4 to 20 mA, 0 to 10 V
- Sampling Rate (all channels): 10 samples/sec for voltage
  6 samples/sec for current
- Accuracy: ±0.1% FSR @ 25°C, ±0.3% FSR @ -10 and 60°C
- Impedance: 900K ohms (min.)
- Built-in Resistor for Current Input: 106 ohms

**Configurable Digital Input/Output Channels**

- Channels: 12 points

**Digital Input**

- Sensor: NPN, PNP sensor type
- I/O Mode: DI or event counter (up to 900 Hz)
- Dry Contact:
  - Logic 0: short to GND
  - Logic 0: Open
- Wet Contact:
  - Logic 0: 0 to 3 VDC
  - Logic 1: 10 to 30 VDC
- Common Type: 6 points per COM
- Power off Storage for Counter Mode: Yes

**Digital Output**

- Sensor: Sink, 45 VDC, 200 mA
- Pulse Wave Width: 10 ms /100 Hz

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**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

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The certification logos shown here apply to some or all of the products in this section. Please see the Specifications section or Moxa’s website for details.
ioLogik E2260

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

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

Introduction

Brings Intelligence to Temperature Measurement

The ioLogik temperature I/O brings Intelligence to temperature sensors. It is equipped with virtual channels that are available for calculating the average value of each channel and the difference between two physical channels—PC or controller NOT required.

Great Compatibility with Popular RTD Temperature Sensors

The ioLogik E2260 can be used with PT100, PT1000, JPT, and Ni sensor types, and resistors up to 2.2K ohms. You can use your own resistance sensor, such as PTC or NTC for your HVAC applications.

Specifications

RTD

Channels: 6, RTD channels
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, 45 VDC, 200 mA
Optical Isolation: 3K VDC or 2K Vrms
Pulse out Frequency: 100 Hz
Over-voltage Protection: +45 VDC
Over-current Limit: 750 mA
Over-temperature Shutdown: 175˚C

Pin Assignment

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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
### Introduction

**Extending the Wiring Length**

The ioLogik E2262 extends the length of your sensors’ wiring by a factor of 10. For example, the usual length of a K-Type sensor 10 m, but the ioLogik E2262 can accept 100 meters of K-Type TC wiring.

**Brings Intelligence to Temperature Measurement**

The ioLogik temperature I/O brings intelligence to temperature sensors. It is equipped with virtual channels that are available for calculating the average value of each channel and the difference between two physical channels—PC or controller NOT required.

### Specifications

#### Thermocouple

- **Channels**: 8, thermocouple input
- **Sensor Type**: J, K, T, E, R, S, B, N type TC and mV mode
- **Sampling Rate (all channels)**: 10 samples/sec
- **Effective Resolution**: 16-bit
- **Accuracy**: ±0.1% FSR @ 25°C, ±0.3% FSR @ -10 and 60°C
- **Input Impedance**: 1 M ohms or better

#### Digital Output

- **Channels**: 4, Sink, 45 VDC/200 mA
- **Isolation**: 3K VDC or 2K Vrms
- **Pulse-out Frequency**: 100 Hz
- **Over-voltage Protection**: +45 VDC
- **Over-current Limit**: 750 mA
- **Over-temperature Shutdown**: 175°C

### Ordering Information

- **ioLogik E2262**: Active Ethernet I/O with 8 thermocouple inputs and 4 digital outputs
- **LDP1602**: LCD module with 16 x 2 text display and 5 buttons
The ioLogik R2000 series was designed for system integrators to acquire and control remote digital and analog devices over RS-485. Types of digital on/off devices that can be controlled include proximity switches, mechanical switches, push buttons, optical sensors, LEDs, and light switches. Types of analog devices that can be controlled include pH, conductivity, temperature, humidity, pressure, flow, actuator, and valves.

The ioLogik R2000 series of servers can work with the standard Modbus protocol. SCADA software or the MxIO DLL library can be used to access the server.

**Full Range of DI/DO and AI/AO Models**

RS-485 is still the most common interface used by many industries, and Moxa now offers a high quality line of remote I/O servers that support RS-485.

- Multi-functional digital I/O with DI/Event Counter and DO/Pulse Output modes
- Multi-function analog I/O with mA/mV/Voltage modes
- Over-current and over-voltage protection
- PLC-grade I/O design that ensures accuracy and reliability during field operation
- Remote management of firmware upgrades over RS-485 networks

**Independent Configuration of Multi-Functional DI/DO and AI/AO Channels**

Each input signal can be independently configured, with DI/Event Counter modes available for digital inputs and voltage/current modes available for analog inputs. Each digital output can be independently configured for DO or Pulse Output mode. The analog input channels support various signals ranging from ±150 mV to ±10V at 16-bit resolution. The analog output channels support 0 to 10V and 4 to 20 mA @ 12-bit resolution.

**Easy Management of Firmware over RS-485**

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 server. Moxa offers the optional snap-on LCD module as an easier way to configure and monitor ioLogik E2000 and R2000 servers.

The LCD module is hot-pluggable, so it can be installed or removed without turning off the server.
ioLogik R2110

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

> 12-point 24 VDC digital input with DI/event counter mode, software selectable filtering time, 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 lib for VB, VC++, BCB
> Upgrade firmware over RS-485

The certification logos shown here apply to some or all of the products in this section. Please see the Specifications section or Moxa’s website for details.

### Specifications

**Digital Input**
- **Inputs:** 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**
- **Outputs:** 8, sink type
- **I/O Mode:** DO or pulse output (up to 50 Hz)
- **On-state Voltage:** 24 VDC nominal
- **Output Current Rating:** Max. 200 mA per channel
- **Optical Isolation:** 3K VDC or 2K Vrms
- **Protection:**
  - Over-temperature shutdown: Min. 175°C
  - Over-current limit: typ. 400 mA/channel
- **Output Frequency:** 50 Hz

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### Ordering Information

**ioLogik R2110:** RS-485 remote I/O server 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-channel analog input for millivolts (mV), voltage, current signal with wire-off detection (at 4 to 20 mA)
> 2-channel analog output for voltage, current actuator control
> 16-bit resolution analog input, 12-bit resolution analog output
> Easy-to-use, quick programming lib for VB, VC++, BCB
> NIST-Traceability calibration for analog I/O channels
> Upgrade firmware over RS-485

---

### Specifications

#### Analog Input
- **Inputs:** 8
- **Resolution:** 16-bit
- **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
- **Optical Isolation:** 2K VDC or 3K Vrms

#### Analog Output
- **Outputs:** 2
- **Resolution:** 12-bit
- **Output Range:** 0 to 10V, 4 to 20 mA
- **Drive Voltage:** 15 VDC for current output
- **Accuracy:** ±0.1% FSR @ 25°C, ±0.3% FSR @ -10, 60°C CMR @ 50/60 Hz: 95 dB min.
- **Zero Drift:** ±9 µV/°C
- **Span Drift:** ±25 ppm/°C
- **Load Resistor:** < 250 ohms

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### 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 2 buttons
Remote Monitoring Solutions

ioMirror E3000 Peer-to-Peer I/O

Direct Input-to-output Communication over an IP Network

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

ioMirror in Different Network Infrastructures

**Ethernet Network**

- Input Module: Up to 8 Inputs
- Output Module: Up to 8 Outputs

**Fiber Ethernet Network**

- Input Module
- Redundant Ring
- Output Module

**Wireless LAN Network**

- Input Module
- Output Module
Industrial Networking Solutions

The Easiest Way to Connect Input Signals to Remote Outputs over an IP Network

Configuring ioMirror is easy with ioMirrorAdmin for Windows. With ioMirrorAdmin, input-to-output signal mapping between ioMirror servers can be configured from a local or remote host. “Basic Configuration,” which is also available in the web console, is used for simple mapping of all channels from box to box. “Advanced Configuration” is used for customized channel-to-channel mapping and allows one input channel to be mapped to multiple output channels. ioMirrorAdmin also provides a graphical representation of ioMirror server relationships, complete with signal direction, making it easy to map signals quickly and accurately.

Take Advantage of Existing Ethernet Infrastructure

Why spend extra effort installing additional signal wires if you already have a high-speed Ethernet infrastructure? Modern LANs, including Ethernet, optical fiber, and wireless, already provide the necessary high-speed connectivity. General input/output signals can be carried by a pair of ioMirror I/O servers, making wiring simpler than ever.

Simultaneously Send Input Signals to Two Locations

The ioMirror E3000 can send one input signal simultaneously to two digital outputs over the network. This function could be used, for example, to monitor tank levels from two different display panels.

Easy and Flexible Installation

Installing ioMirror E3000 servers is easy using the Windows utility that comes with each server. If all channels are mapped from one module to another, all you need to do is assign the remote IP address. For more sophisticated mapping, individual channels can be mapped quickly and easily using the comprehensive graphical user interface.

Useful Troubleshooting Tools

Many useful tools are provided that help keep you informed about the health and performance of your ioMirror E3000 servers and connections.

- Optional LCD attachment for local IP configuration
- Alarm port for 24 VDC alarm devices, such as pole displays, LEDs, and buzzers
- Remote alarm and independent event log that records each connection and disconnection
- Fast recovery after network disconnection
- Modbus/TCP support for SCADA connectivity

Using ioMirror as Part of a Tank Monitoring Panel

This real-world application uses ioMirror in the vegetable oil industry, where oil tank levels are monitored constantly. The customer uses a computer-based SCADA system for general management and control, with an LED panel in the control room for direct monitoring of tank levels. The original solution was a significant challenge, since it meant maintaining 200 meters of dedicated copper wire for 24 V signals. The advantage of using the ioMirror Ethernet I/O server was that the existing fiber network could be used instead. The level sensor simply connects to an ioMirror server, which is connected to the network. Sensor signals are automatically forwarded over the network to another ioMirror server, which sends matching 24 VDC digital output signals directly to the LED. The ioMirror system was so easy to set up that the customer completed the project in just a few days, and at very little cost.
Remote Monitoring Solutions

Common Specifications for ioMirror E3000 series

LAN
Ethernet: 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, SNTP

Power Requirements
Input Voltage: 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), 5 to 95% RH
Storage Temperature: -40 to 85°C (-40 to 185°F), 5 to 95% RH

Regulatory Approvals
EMC: FCC part 15, CISPR (EN55022) Class B
CE: IEC 61000-4
IEC 61000-6
Safety: UL 508
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6
Warranty: 2 years (see www.moxa.com/warranty for details)

Dimensions (unit = mm)

Side View

Front View

Rear View
ioMirror E3210

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

Direct input-to-output communication over IP
The ioMirror E3000 Ethernet I/O server is 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 as well as to a local PLC or DCS controller. Over a local area network, the ioMirror achieves low signal latency, which is typically 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 sixteen 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 sixteen different display panels, all at the same time.

Local alarm with remote alarm messages for monitoring connectivity
The ioMirror E3210 has a 24 VDC alarm output channel that can activate an attached buzzer or display LED when the connection fails. In addition, both ioMirror modules can send messages to the event log software. This ensures that at least one of the warning messages will reach the event log software.

Specifications
Digital Input
- Inputs: 8, source type
- I/O Mode: Digital Input
- Dry Contact:
  - Logic 0: close to GND
  - Logic 1: open
- Wet Contact:
  - Logic 0: 0 to 3 VDC
  - Logic 1: 10 to 30 VDC
- Isolation: 2K Vrms
- Common Type: 8 points per COM

Digital Output
- Outputs: 8, sink type
- I/O Mode: Digital output
- On-status Voltage: 24 VDC (typical)
- Output Current Rating: Max. 200 mA per channel
- Optical Isolation: 2K Vrms per 2K VDC
- Protection:
  - Over-voltage Protection: ±50 VDC
  - Over-current Limit: 600 mA (typical)
  - Over-temperature Shutdown: 160°C (min.)

Alarm Port Output
- Outputs: 1, sink type
- On-status Voltage: 24 VDC (typical)
- Output Current Rating: Max. 200 mA per channel
- Optical Isolation: 2K Vrms per 3K VDC
## I/O Pin Assignment

### I/O (left to right)

|   | D0 COM | D0 | D1 | D2 | D3 | D4 | D5 | D6 | D7 | D8 | D9 | D10 | D11 | D12 | D13 | D14 | D15 | D16 | D17 | D18 | D19 | D20 | D21 | D22 | D23 | D24 |
| 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 23|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

## Wiring Example

### Digital Input (Dry Contact)

### Digital Input (Wet Contact with NPN Sensor)

### Digital Output

### Alarm Port

## 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
LDP1602 LCD Module

Snap-on module for ioLogik 2000 series

> Hot-pluggable display module for ioLogik Active Ethernet I/O and serial remote 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 by I/O)
> Supports ioLogik E2000, ioLogik R2000, and ioMirror E3000 series

The certification logos shown here apply to some or all of the products in this section. Please see the Specifications section or Moxa’s website for details.

Installing the LCD Module

1. Remove the ioLogik server’s top cover.
2. Plug in the LCD module.
3. Check and configure the IP address.
4. Check the 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
Remote Monitoring Solutions

Slice Form Factor, High Density Remote I/O

Create a Compact, Flexible I/O Solution

Remote I/O > Slice Form Factor, High Density Remote I/O

Fiber Optic Cable (100BaseFX or 1000BaseSX/LX/LHX/ZX)
Twisted Pair Cable (10/100BaseT(X))
RS-232/485 Cable
ioLogik 4000 Modular Remote I/O

Flexible remote I/O with a variety of I/O modules

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

- Slice Type I/O Modules
- Removable Terminal Block
- Spring Type Terminal Block
- Module Coding Tag
ioAdmin allows you to configure and monitor ioLogik 4000 modular I/O servers remotely. IoAdmin automatically detects the installed ioLogik Ethernet I/O server and presents the installation sequence of the I/O modules. IoAdmin also detects and generates a Modbus address table, which can be printed or stored on a computer for SCADA software configuration.

The utility also allows you to:
1. Automatically search for installations
2. Look for help using online documentation
3. Generate reports of I/O combinations

IoAdmin is a powerful, Windows-based configuration and management tool. You can use IoAdmin to modify the IP address, update communication parameters, and configure all other settings easily.

In addition, IoAdmin can be used to configure ioLogik modular I/O servers from a remote host. This means that ioLogik modular I/O servers can be configured from anywhere over the Ethernet, which can help reduce your operating expense.

The M-2402, M-2403, M-2404, and M-2405 modules include a self-diagnostic function to guarantee that the digital output signal is monitored electronically. The hardware-monitored status is written to the logic system, and you can obtain the actual digital output status over the network when the software sends a command to the module. This is all done internally, and configuration is not required.

Although IoAdmin is the main configuration interface for ioLogik servers, you can also check the following information using the ioLogik server’s web console:
- Network configuration
- Modular I/O
- Status of each channel
ioLogik 4000 servers support the standard Modbus protocol and are compatible with most SCADA software. In addition, Moxa provides an easy-to-use MXIO DLL library that helps programmers develop application software with Visual Basic or C language under Windows.

## Versatile Software Support

ioLogik 4000 servers support the standard Modbus protocol and are compatible with most SCADA software. In addition, Moxa provides an easy-to-use MXIO DLL library that helps programmers develop application software with Visual Basic or C language under Windows.

### Supports Various SCADA Software Packages

The ioLogik 4000 line was designed for the standard Modbus protocol and can be used with most SCADA systems. The following SCADA software is compatible with ioLogik 4000 servers: Modicon Driver, Wonderware Intouch, GE Fanuc iFix and CIMPACTS, Broadwin, kingview, and Citect. In addition, we successfully tested the OPC Server “Kepware,” which means that ioLogik 4000 servers can be accessed either from a SCADA system or through an OPC Server.

Note: The installation guides for different SCADA software packages can be downloaded from Moxa’s download center.

### Dimensions (unit = mm)

<table>
<thead>
<tr>
<th>I/O Network Adaptor</th>
<th>I/O Module Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side View</td>
<td>Side View</td>
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<tr>
<td>Front View</td>
<td>Front View</td>
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## Modular Remote I/O Selection Guide

### I/O Modules

#### Digital Input Modules

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#### Analog Input Modules

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<td>RTD (Ohm)</td>
<td>Thermo-couple (µV)</td>
</tr>
</tbody>
</table>

#### Analog Output Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>M-4201</th>
<th>M-4202</th>
<th>M-4210</th>
<th>M-4211</th>
<th>M-4212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channels</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Current</td>
<td>0 to 20 mA</td>
<td>4 to 20 mA</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Voltage</td>
<td>–</td>
<td>–</td>
<td>0 to 10V</td>
<td>-10 to 10V</td>
<td>0 to 5V</td>
</tr>
<tr>
<td>Resolution</td>
<td>12-bit</td>
<td>12-bit</td>
<td>12-bit</td>
<td>12-bit</td>
<td>12-bit</td>
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<tr>
<td>Connector</td>
<td>RTB</td>
<td>RTB</td>
<td>RTB</td>
<td>RTB</td>
<td>RTB</td>
</tr>
<tr>
<td>Isolation</td>
<td>1K VDC galvanic isolation</td>
<td></td>
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### Power Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>M-7001</th>
<th>M-7002</th>
<th>M-7803</th>
<th>M-7804</th>
<th>M-7805</th>
<th>M-7806</th>
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<td>Channels</td>
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<td>0</td>
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<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Voltage</td>
<td>24 VDC</td>
<td>DC: 5, 24, 48 VDC AC: 110/220 VAC</td>
<td>–</td>
<td>0 V</td>
<td>24 VDC</td>
<td>4 for 0 VDC</td>
</tr>
<tr>
<td>Purpose</td>
<td>System power</td>
<td>Field power</td>
<td>Shield signal</td>
<td>Field power</td>
<td>Field power</td>
<td>Field power</td>
</tr>
</tbody>
</table>
NA-4010

Ethernet network adaptor module

The certification logos shown here apply to some or all of the products in this section. Please see the Specifications section or Moxa’s website for details.

Specifications

Network
Ethernet: 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
Number of I/O Modules: Max. of 32 I/O expansion modules

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. 10A

Isolation
System Power to I/O Driver: Optical isolation

Environmental Limits
Operating Temperature: -20 to 60°C, 5 to 90%RH
Storage Temperature: -45 to 85°C
Vibration: IEC-68-2-6, 2G in operation

Regulatory Approvals
EMC: CE EN-55082, EN-55081
Safety: UL 508

Weight
Net Weight: 150 g

Ordering Information

Step 1: Select a Network Adaptor Module
Step 2: Select I/O Modules
Step 3: Select Power Modules (optional)

NA-4010: Ethernet Network Adaptor (Modbus/TCP)

*The NA-4010 Ethernet Network Adaptor is expandable with up to 32 I/O modules. Please refer to pages 5-31 to 5-44 to select the M-series modules that you need for your own application.
NA-4020/4021
RS-485 or RS-232 network adaptor modules

The certification logos shown here apply to some or all of the products in this section. Please see the Specifications section or Moxa’s website for details.

Specifications

Serial Communication
Baudrate: 1200 to 115200 bps
Data Bits: 7, 8
Parity Bits: None, Even, Odd
Stop Bits: 1, 2
Signals:
NA-4020: Data+, Data-, Gnd, DIR
NA-4021: TxD, RxD, Gnd

Software Features
Protocols: Modbus/RTU, Modbus/ASCII
Modbus Address: 00 to 99 by rotary switches
Utility: ioAdmin
Programming Library: MXIO DLL library for Windows supporting Visual Basic, Visual C++, Borland C++ Builder
Number of I/O Modules: Max. of 32 I/O expansion modules

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. 1.5A @ 5 VDC

Field Power
Rated Voltage: 11 to 28.8 VDC, 24 VDC typical
Current in Field Power Contact: Max. 10A

Isolation
System Power to I/O Driver: Optical isolation

Environmental Limits
Operating Temperature: -20 to 60°C, 5 to 90%RH
Storage Temperature: -45 to 85°C
Vibration: IEC-68-2-6, 2G in operation

Regulatory Approvals
EMC: CE EN-55082, EN-55081
Safety: UL 508

Weight
Net Weight: 150 g

Ordering Information

Step 1: Select a Network Adaptor Module
NA-4020: RS-485 Network Adaptor (Modbus)
NA-4021: RS-232 Network Adaptor (Modbus)

Step 2: Select I/O Modules
M-1000/2000/3000/4000/6000 Series

Step 3: Select Power Modules (optional)
M-7000 Series

*The NA-4020/4021 RS-485/RS-232 Adaptors are expandable with up to 32 I/O modules. Please refer to pages 5-31 to 5-34 to select the M-series modules that you need for your own application.
**Digital Input Modules**

4 or 8-channel 24 VDC digital input modules

### M-1400 4 digital inputs, sink, 24 VDC
- **Inputs per Module:** 4 points, 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:** 4 points/2 COM
- **Power Consumption:** Max. 35 mA @ 5 VDC

### M-1401 4 digital inputs, source, 24 VDC
- **Inputs per Module:** 4 points, 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:** 4 points/2 COM
- **Power Consumption:** Max. 35 mA @ 5 VDC

### M-1800 8 digital inputs, sink, 24 VDC
- **Inputs per Module:** 8 points, 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 points, 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
**Remote Monitoring Solutions**

### 16-channel 24 VDC digital input modules

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

- **Inputs per Module:** 16 points, 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 points/2 COM
- **Power Consumption:** Max. 40 mA @ 5 VDC

### 4-channel 48 VDC digital input modules

**M-1410** 4 digital inputs, sink, 48 VDC

- **Inputs per Module:** 4 points, sink type
- **On-state Voltage:** 48 VDC nominal, min. 34 VDC to max. 60 VDC
- **Min. Off-state Voltage:** Max. 10 VDC
- **On-state Current:** Max. 4 mA / point @ 48 VDC
- **Input Impedance:** Typ. 12K ohms
- **Common Type:** 4 points/2 COM
- **Power Consumption:** Max. 35 mA @ 5 VDC

**M-1411** 4 digital inputs, source, 48 VDC

- **Inputs per Module:** 4 points, source type
- **On-state Voltage:** 48 VDC nominal, min. 34 VDC to max. 60 VDC
- **Min. Off-state Voltage:** Max. 10 VDC
- **On-state Current:** Max. 4 mA / point @ 48 VDC
- **Input Impedance:** Typ. 12K ohms
- **Common Type:** 4 points/2 COM
- **Power Consumption:** Max. 35 mA @ 5 VDC
### 4-channel 110/220 VAC digital input modules

**M-1450 4 digital inputs, 110 VAC**
- **Inputs per Module**: 4 points
- **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 points/2 COM (single common)
- **Power Consumption**: Max. 35 mA @ 5 VDC

**M-1451 4 digital inputs, 220 VAC**
- **Inputs per Module**: 4 points
- **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 points/2 COM (single common)
- **Power Consumption**: Max. 35 mA @ 5 VDC

### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>M-1400</th>
<th>M-1401</th>
<th>M-1410</th>
<th>M-1411</th>
<th>M-1800</th>
<th>M-1801</th>
<th>M-1600</th>
<th>M-1601</th>
<th>M-1450</th>
<th>M-1451</th>
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<td>16</td>
<td>16</td>
<td>4</td>
<td>4</td>
</tr>
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<td>Sink/Source</td>
<td>Sink</td>
<td>Source</td>
<td>Sink</td>
<td>Sink</td>
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<td>Sink</td>
<td>Source</td>
<td>Sink</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Connector</td>
<td>RTB</td>
<td>RTB</td>
<td>RTB</td>
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<td>24 VDC</td>
<td>48 VDC</td>
<td>48 VDC</td>
<td>24 VDC</td>
<td>24 VDC</td>
<td>24 VDC</td>
<td>24 VDC</td>
<td>110 VAC</td>
<td>220 VAC</td>
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<td></td>
<td></td>
<td></td>
<td>Optical isolation</td>
<td></td>
</tr>
</tbody>
</table>
Digital Output Modules

4 or 8-channel 24 VDC digital output modules

**M-2400 4 digital outputs, sink, 24 VDC, 0.5A**
- Outputs per Module: 4 points, 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. 0.5A per channel
- Common Type: 4 points /4 COM (single common)
- Power consumption: Max. 45 mA @ 5 VDC

**M-2401 4 digital outputs, source, 24 VDC, 0.5A**
- Outputs per Module: 4 points, 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. 0.5A per channel
- Common Type: 4 points /4 COM (single common)
- Power consumption: Max. 45 mA @ 5 VDC

**M-2800 8 digital outputs, sink, 24 VDC, 0.5A**
- Outputs per Module: 8 points, 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. 0.5A per channel
- Common Type: 8 points /external common (single common)
- Power consumption: Max. 60 mA @ 5 VDC

**M-2801 8 digital outputs, source, 24 VDC, 0.5A**
- Outputs per Module: 8 points, 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. 0.5A per channel
- Common Type: 8 points /external common (single common)
- Power consumption: Max. 60 mA @ 5 VDC
### 4-channel digital output modules with diagnostics

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Outputs per Module</th>
<th>Output Voltage Range</th>
<th>On-state Voltage Drop</th>
<th>On-state Current</th>
<th>Off Leakage Current</th>
<th>Output Current Rating</th>
<th>Common Type</th>
<th>Self Diagnostics</th>
<th>Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-2402</td>
<td>4 digital outputs, diagnostics, sink, 24 VDC, 0.5A</td>
<td>4 points, sink type</td>
<td>24 VDC nominal, min. 11 VDC to max. 28.8 VDC</td>
<td>Max. 0.3 VDC @ 25°C</td>
<td>1 mA per channel</td>
<td>50 µA</td>
<td>Max. 0.5A per channel</td>
<td>4 points /4 COM (single common)</td>
<td>Yes</td>
<td>Max. 45 mA @ 5 VDC</td>
</tr>
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<td>M-2403</td>
<td>4 digital outputs, diagnostics, source, 24 VDC, 0.5A</td>
<td>4 points, source type</td>
<td>24 VDC nominal, min. 11 VDC to max. 28.8 VDC</td>
<td>Max. 0.3 VDC @ 25°C</td>
<td>1 mA per channel</td>
<td>50 µA</td>
<td>Max. 0.5A per channel</td>
<td>4 points /4 COM (single common)</td>
<td>Yes</td>
<td>Max. 45 mA @ 5 VDC</td>
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<tr>
<td>M-2404</td>
<td>4 digital outputs, diagnostics, sink, 24 VDC, 2A</td>
<td>4 points, sink type</td>
<td>24 VDC nominal, min. 11 VDC to max. 28.8 VDC</td>
<td>Max. 0.3 VDC @ 25°C</td>
<td>1 mA per channel</td>
<td>50 µA</td>
<td>Max. 2A per channel</td>
<td>4 points /4 COM (single common)</td>
<td>Yes</td>
<td>Max. 45 mA @ 5 VDC</td>
</tr>
<tr>
<td>M-2405</td>
<td>4 digital outputs, diagnostics, source, 24 VDC, 2A</td>
<td>4 points, source type</td>
<td>24 VDC nominal, min. 11 VDC to max. 28.8 VDC</td>
<td>Max. 0.3 VDC @ 25°C</td>
<td>1 mA per channel</td>
<td>50 µA</td>
<td>Max. 2A per channel</td>
<td>4 points /4 COM (single common)</td>
<td>Yes</td>
<td>Max. 45 mA @ 5 VDC</td>
</tr>
</tbody>
</table>
16-channel digital output modules

**M-2600 16 digital outputs, sink, 24 VDC, 0.3A**
- **Outputs per Module:** 16 points, 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. 0.3A per channel
  - Max. 4A per common
- **Common Type:** 16 points / 2 COM (single common)
- **Power Consumption:** Max. 80 mA @ 5 VDC

**M-2601 16 digital outputs, source, 24 VDC, 0.3A**
- **Outputs per Module:** 16 points, 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. 0.3A per channel
  - Max. 4A per common
- **Common Type:** 16 points / 2 COM (single common)
- **Power Consumption:** Max. 80 mA @ 5 VDC
### 2-channel relay output module

**M-2250** 2 digital outputs, relay, 24 VDC/230 VAC, 2A

- **Outputs per Module:** 2 points, relay
- **Relay Type:** Form A, Normally Open (N.O.), Single Pole, Single Throw (SPST)
- **Output Voltage Range:** Load dependent
  - 5 to 28.8 VDC / 2A resistive
  - 48 VDC / 0.8A resistive
  - 110 VAC / 0.3A resistive
  - 250 VAC / 2A resistive
- **Min. Load:** 100 µA, 100 mVDC per point
- **Max. On-state Voltage Drop:** 0.5V @ 2A, resistive load, 24 VDC
- **Off-state Leakage Current:** Max. 1.5 mA
- **Common Type:** 1 point/1 COM
- **Power Consumption:** Max. 65 mA @ 5 VDC

**M-2254** 2 digital outputs, Triac, 12 to 125 VAC, 0.5A

- **Outputs per Module:** 2 points
- **Switch Type:** Zero crossing
- **Rated Load Voltage:** 15 to 132 VAC
- **Output Current Rating:** 0.05 to 0.5A
- **Frequency Range:** 47 to 63 Hz
- **Surge Current:** 40A (16 ms) / 4A (30S)
- **On-state Voltage Drop:** 0.5V @ 2A, resistive load, 24 VDC
- **Off-state Leakage Current:** Max. 1.5 mA
- **Common Type:** 2 points / 2 COM
- **Power Consumption:** Max. 35 mA @ 5 VDC

### Ordering Information

#### Digital Output Modules

<table>
<thead>
<tr>
<th>Model</th>
<th>M-2400</th>
<th>M-2401</th>
<th>M-2800</th>
<th>M-2801</th>
<th>M-2600</th>
<th>M-2601</th>
<th>M-2402</th>
<th>M-2403</th>
<th>M-2404</th>
<th>M-2405</th>
<th>M-2250</th>
<th>M-2254</th>
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</thead>
<tbody>
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<td>Channels</td>
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<td>Source</td>
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<td>Source</td>
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<td>Triac</td>
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<td>24 VDC</td>
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<td>24 VDC</td>
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<td>230 VAC/24 VDC</td>
<td>12 to 125 VDC</td>
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<td>Isolation</td>
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<td>–</td>
<td>–</td>
<td>–</td>
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<td>Optical isolation</td>
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<td>–</td>
<td>–</td>
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</tr>
<tr>
<td>Diagnostics</td>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>
Remote Monitoring Solutions

Analog Input Modules

4-channel analog input modules, 12-bit resolution

**M-3400** 4 analog inputs, 0 to 20 mA, 12 bits
**M-3402** 4 analog inputs, 4 to 20 mA, 12 bits

**Input Specifications**
- Resolution in Ranges: 12 bits, 4.88 µA/bit (M-3400)
- 12 bits, 3.91 µA/bit (M-3402)
- Input Current Range: 0 to 20 mA (M-3400)
- 4 to 20 mA (M-3402)
- 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 / all channels

**General Specifications**
- Power Consumption: Max. 150 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG14

**M-3410** 4 analog inputs, 0 to 10V, 12 bits
**M-3412** 4 analog inputs, -10 to 10V, 12 bits
**M-3414** 4 analog inputs, 0 to 5V, 12 bits

**Input Specifications**
- Resolution in Ranges: 12 bits, 4.88 mV/bit (M-3410)
- 12 bits, 3.91 mV/bit (M-3412)
- Input Current Range: 0 to 10 mA (M-3410)
- -10 to 10 mA (M-3412)
- 0 to 5 mA (M-3414)
- 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 / all channels

**General Specifications**
- Power Consumption: Max. 150 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG14
4-channel analog input channels, 14-bit resolution

**M-3401** 4 analog inputs, 0 to 20 mA, 14 bits

**M-3403** 4 analog inputs, 4 to 20 mA, 14 bits

### Input Specifications
- Resolution in Ranges: 14 bits, 1.22 µA/bit (M-3401)
- 14 bits, 0.98 µA/bit (M-3403)
- Input Current Range: 0 to 20 mA (M-3401)
- 4-20 mA (M-3403)
- 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 msec. / all channels

### General Specifications
- Power Consumption: Max. 150 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG14

**M-3411** 4 analog inputs, 0 to 10V, 14 bits

**M-3413** 4 analog inputs, -10 to 10V, 14 bits

### Input Specifications
- Resolution in Ranges: 14 bits, 0.61 mV/bit (M-3411)
- 14 bits, 1.22 mV/bit (M-3413)
- Input Voltage Range: 0 to 10V (M-3411)
- -10 to 10V (M-3413)
- 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 msec. / all channels

### General Specifications
- Power Consumption: Max. 150 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG14

**M-3415** 4 analog inputs, 0 to 5V, 14 bits

### Input Specifications
- Resolution in Ranges: 14 bits, 0.31 mV/bit (M-3415)
- Input Voltage Range: 0 to 5V (M-3415)
- 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 msec. / all channels

### General Specifications
- 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

**Input Specifications**
- Sensor Types: PT50, PT100, PT200, PT500, PT1000, JPT100, JPT200, JPT500, JPT1000, Ni100, Ni200, Ni500, Ni1000, Ni120, CU10,
  - Resistance 100 milli-ohm/bit,
  - Resistance 10 milli-ohm/bit,
  - Resistance 20 milli-ohm/bit
- Data Format: 16-bit integer (2’s complement)
- Resolution: 0.1°C / 10 milli-ohm
- Accuracy: ±0.1%, FSR @ 25°C
  ±0.3%, FSR @ 0°C, 60°C
- Input Impedance: 500K ohms
- Conversion Time: 200 ms / all channels
- Diagnostics: Range over (if range over, data=Dx8000)

**General Specifications**
- 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

**Input Specifications**
- Sensor Types: Type J/K/T/E/R/S/B/N/L/U/C/D
  - mV input 10 µV/bit, 2 µV/bit
- Data Format: 16-bit integer (2’s compliment)
- Resolution: 0.1°C / 10µV
- Accuracy: ±0.1%, FSR @ 25°C
  ±0.3%, FSR @ 0°C, 60°C
- Input Impedance: 500K ohms
- Conversion time: 200 ms / all channels
- Diagnostics: Range over (if range over, data=Dx8000)

**General Specifications**
- Power Consumption: Max. 80 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG14

### Ordering Information

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<thead>
<tr>
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<th>M-3410</th>
<th>M-3412</th>
<th>M-3414</th>
<th>M-3401</th>
<th>M-3403</th>
<th>M-3411</th>
<th>M-3413</th>
<th>M-3415</th>
<th>M-6200</th>
<th>M-6201</th>
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<td>Current</td>
<td>Voltage</td>
<td>Connector</td>
<td>Resolution</td>
<td>Isolation</td>
<td>Sensor Input</td>
<td>RTD (Ohm)</td>
<td>Thermo-couple (µV)</td>
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<td>M-3412</td>
<td>M-3414</td>
<td>M-3401</td>
<td>M-3403</td>
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<td>4 to 20 mA</td>
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<td>–</td>
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<td>0 to 20 mA</td>
<td>4 to 20 mA</td>
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<td>–</td>
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<td>-10 to 10V</td>
<td>0 to 5V</td>
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<td>–</td>
<td>0 to 10V</td>
<td>-10 to 10V</td>
<td>0 to 5V</td>
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</table>

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Analog Output Modules

2-channel analog input modules, 12-bit resolution

**M-4201** 2-analog outputs, 0 to 20 mA, 12 bits

**Output Specifications**
- Resolution in Ranges: 12 bits, 4.88 µA/bit (M-4201)
- Output Current Range: 0 to 20 mA (M-4201) 4 to 20 mA (M-4202)
- 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 / all channels
- Power Consumption: Max. 65 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG 14

**M-4202** 2-analog outputs, 4 to 20 mA, 12 bits

**M-4210** 2-analog outputs, 0 to 10 V, 12 bits

**M-4211** 2-analog outputs, -10 to 10 V, 12 bits

**M-4212** 2-analog outputs, 0 to 5 V, 12 bits

**Input Specifications**
- Resolution in Ranges: 12 bits, 2.44 mV/bit (M-4210)
  12 bits, 4.88 mV/bit (M-4211)
  12 bits, 1.22 mV/bit (M-4212)
- Output Current Range: 0 to 20 mA (M-4210)
  4 to 20 mA (M-4212)
- Data Format: 16-bit integer (2’s complement)
- Accuracy: ±0.1%, FSR @ 25°C
  ±0.3%, FSR @ 0°C, 60°C
- Output Impedance: Min. 5K ohms
- Conversion Time: 2 ms / all channels
- Power Consumption: Max. 200 mA @ 5 VDC
- Isolation: I/O to logic: Photocoupler isolation
- Wiring: I/O cable max. AWG 14

### Ordering Information

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<thead>
<tr>
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<th>Channels</th>
<th>Current</th>
<th>Voltage</th>
<th>Resolution</th>
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<tr>
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<td>RTB</td>
<td>1K VDC galvanic isolation</td>
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<td>M-4211</td>
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Power Modules
Power expansion and field power or potential distribution

Power expansion module
The system power expansion module is designed to provide extra power for connected I/O expansion modules. Each network adaptor can provide 1.4A @ 5 VDC. If you require more power for your installed I/O expansion modules, you will need to use an M-7001 module. However, please note that the M-7001 can only provide 1A @ 5 VDC.

Field power distributor module
The field power distributor modules are 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 module.

Potential distributor module
There are three types of potential distributor modules that provide extra wiring points, such as shielding ground, 0V field power, and 24V field power. For example, the 8-channel digital input (sink type) module by itself does not have a 24V wiring point. You may add an M-7805 for easier wiring.
**M-7001 System power module**

- System Input Voltage: 24 VDC, 11 to 28.8 VDC
- Field Power Input Voltage: 24 VDC (+20%)
- System Bus Output Voltage: 5 VDC (Max.)
- Field Power Contacts Current: 10A (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: 10A (Max.)

**M-7803 Shield signal**

- Channels: 8
- Mode: Shield Signal

**M-7804 0 VDC**

- Channels: 8
- Mode: 0 VDC

**M-7805 24 VDC**

- Channels: 8
- Mode: 24 VDC

**M-7806 24/0 VDC**

- Channels: 4
- Mode: 24 VDC or 0 VDC

### Ordering Information

<table>
<thead>
<tr>
<th>Power Modules</th>
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<th>M-7002</th>
<th>M-7803</th>
<th>M-7804</th>
<th>M-7805</th>
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<tr>
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<td>Channels</td>
<td>Voltage</td>
<td>Purpose</td>
<td>Model</td>
<td>Channels</td>
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<td>DC, 5, 24, 48 VDC</td>
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<td>24 VDC</td>
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<tr>
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<td>Field power</td>
<td>Shield signal</td>
<td>Field power</td>
<td>Field power</td>
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</table>
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 (W x L x H): 77.5 x 67.5 x 51 mm
- RoHS compliant

**20-pin to 20-pin flat cable**
- Connecting between TB1600 and ioLogik 4000 series
- Length: 50 cm
- Number of pins: 20

**M-8001-PK** Removable terminal block
- Terminal block for ioLogik 4000 series
- Packaging: 9 pcs in one box

**M-8003-PK** Marker with 0 to 9 numbering
- Marker for ioLogik 4000 series
- Packaging: 100 pcs in one box

**M-8004-PK** Blank marker
- Packaging: 100 pcs in one box

### Ordering Information

- **TB 1600**: DIN-rail mounting screw terminal module with 20-pin connector
- **20-pin to 20-pin flat cable**: 20P-to-20P 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