

ioLogik 4000 Series

Modular remote I/O



- > I/O expansion without a backplane
- > Active communications with MX-AOPC UA Server
- > Supports SNMPv1/v2c
- > Easy configuration with Modular ioAdmin utility
- > Friendly configuration via web browser
- > Simplify I/O management with MXIO library on either a Windows or Linux platform



Introduction

The ioLogik 4000 series is suitable for remote monitoring and alarm systems, such as those 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 4000 series.

Slice Form Factor and Flexible I/O Variety

The unique modular construction of the ioLogik 4000 series allows the mixing and matching of modules to achieve the best combination of I/O modules to meet the needs of a wide range of remote automation applications. The ioLogik 4000 series features an industrial modular housing that allows I/O modules to be added to the base unit without

a backplane. The width of each module is only 12 mm, perfect for space-limited applications. The ioLogik 4000 series provides high density I/O points for greater flexibility and expandability. The modules can connect to virtually any type of sensor, including but not limited to those for temperature, pressure, flow, voltage, current, and contact closure.

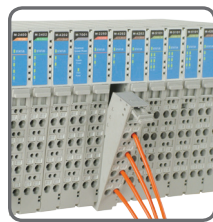
Easy Maintenance

The ioLogik 4000 series comes with removable spring-type terminal blocks (RTBs) that allow you to conserve field wiring for future use.

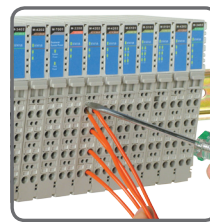
Each I/O expansion module can be quickly and easily replaced.



Slice-Type I/O Modules



Removable Terminal Block



Spring-Type Terminal Block



Module Coding Tag

ioLogik E4200 Specifications

LAN

Ethernet: 2 MACs, 10/100 Mbps RJ45 ports

Protection: 1.5 kV magnetic isolation

Protocols: Modbus/TCP (slave), TCP/IP, UDP, DHCP, BOOTP, SNMP, HTTP, SNTIP, SMTP

Serial

Interface: 1 RS-232 DB9 male port

Parity: None

Stop Bits: 1

Flow Control: 115200 bps

Protocols: For Moxa OnCell only

Power Requirements

Input Voltage: 11 to 28.8 VDC

Input Current: 175 mA @ 24 VDC

Current for I/O Modules: 1.5 A (max.) @ 5 VDC

Physical Characteristics

Weight: 180 g (0.40 lb)

MTBF (mean time between failures)

Time: 357,000 hrs

Standard: Telcordia SR332

NA-4010 Specifications

LAN

Ethernet: 1 10/100 Mbps RJ45 port
Protocols: Modbus/TCP (slave), HTTP, BOOTP
IP Settings: ARP, BOOTP, static IP

Power Requirements

Input Voltage: 11 to 28.8 VDC
Input Current: 60 mA @ 24 VDC
Current for I/O Modules: 1.5 A (max.) @ 5 VDC

Physical Characteristics

Weight: 150 g (0.33 lb)
MTBF (mean time before failures)
Time: 4,739,300 hrs
Standard: Telcordia SR332

NA-4020/4021 Specifications

Serial

Interface:
 • NA-4020: 1 RS-485-2w terminal block port
 • NA-4021: 1 RS-232 DB9 female port
Parity: None, Even, Odd
Data Bits: 7, 8
Stop Bits: 1, 2
Baudrate: 1200 to 115200 bps
Protocols: Modbus/RTU (slave), Modbus/ASCII (slave)

Power Requirements

Input Voltage: 11 to 28.8 VDC
Input Current: 70 mA @ 24 VDC
Current for I/O Modules: 1.5 A (max.) @ 5 VDC

Physical Characteristics

Weight: 150 g (0.33 lb)
MTBF (mean time between failures)
NA-4020 Time: 4,694,800 hrs
NA-4021 Time: 5,208,300 hrs
Standard: Telcordia SR332

Common Specifications

Field Power

Rated Voltage: 11 to 28.8 VDC
Current in Field Power Contact: 10 A (max.)

Physical Characteristics

Wiring: I/O cable max. 14 AWG
Dimensions: 45 x 99 x 70 mm (1.77 x 3.90 x 2.76 in)
Mounting: DIN rail

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)
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Altitude: Up to 2000 m
 Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

Standards and Certifications

Safety: UL 508
EMC: EN 61000-6-2/6-4
EMI: CISPR 22, FCC Part 15B Class A
EMS:
 IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV
 IEC 61000-4-3 RS:
 80 MHz to 1 GHz: 10 V/m
 1.4 GHz to 2 GHz: 3 V/m
 2 GHz to 2.7 GHz: 1 V/m
 IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV
 IEC 61000-4-5 Surge: Power: 1 kV
 IEC 61000-4-6 CS: 10 V
 IEC 61000-4-8

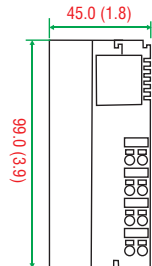
Dimensions

Unit: mm (inch)

I/O Network Adapter

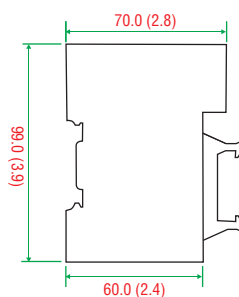


Side View

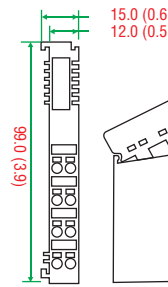


Front View

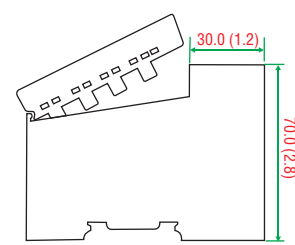
I/O Module



Side View



Front View



Removable View

: Ordering Information

Step 1: Select a network adapter module

ioLogik E4200 or 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

ioLogik E4200: Modular Ethernet remote I/O adapter with Click&Go, up to 16 I/O modules, -10 to 60°C operating temperature

NA-4010: Modular Ethernet remote I/O adapter with up to 32 I/O modules, -10 to 60°C operating temperature

NA-4020: Modular RS-485 remote I/O adapter with up to 32 I/O modules, -10 to 60°C operating temperature

NA-4021: Modular RS-232 remote I/O adapter with up to 32 I/O modules, -10 to 60°C operating temperature

Note: The ioLogik E4200 Modular Ethernet remote I/O adapter can be expanded with up to 16 I/O modules. The NA-4010 and NA-4020/4021 network adapters can be expanded with up to 32 I/O modules.

Package Checklist

- ioLogik 4000 series
- I/O modules (sold separately)
- Power modules (sold separately)
- Quick installation guide (printed)

ioLogik 4000 Expansion Modules

◦ Digital Input Modules

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

Digital Inputs: 8 channels
Type: sink
On-state Voltage: 24 VDC nominal, 11 to 28.8 VDC
Off-state Voltage: 0 to 5 VDC
On-state Current: 6 mA/point @ 28.8 VDC (max.)
Input Impedance: 5.1 kilo-ohms (typical)
Filtering Time: 1.5 ms (typical)
Common Type: External common (single common)
Input Current: 35 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 15,759,240 hrs (Standard: Telcordia SR332)

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

Digital Inputs: 16 channels
Type: sink
On-state Voltage: 24 VDC nominal, 11 to 28.8 VDC
Off-state Voltage: 0 to 5 VDC
On-state Current: 6 mA/point @ 28.8 VDC (max.)
Input Impedance: 5.1 kilo-ohms (typical)
Filtering Time: 1.5 ms (typical)
Common Type: 16 channels for 2 COMs (single common)
Input Current: 40 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O flat cable 20-pin
MTBF: 11,659,560 hrs (Standard: Telcordia SR332)

M-1450: 4 digital inputs, 110 VAC

Digital Inputs: 4 channels, 110 VAC
On-state Voltage: 120 VAC nominal, 85 to 132 VAC
Off-state Voltage: 0 to 45 VAC
On-state Current: 8 mA/point @ 132 VAC (max.)
Input Impedance: 11 kilo-ohms (typical)
Common Type: 4 channels for 2 COMs (single common)
Input Current: 35 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 19,482,240 hrs (Standard: Telcordia SR332)

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

Digital Inputs: 8 channels
Type: source
On-state Voltage: 24 VDC nominal, 11 to 28.8 VDC
Off-state Voltage: 0 to 5 VDC
On-state Current: 6 mA/point @ 28.8 VDC (max.)
Input Impedance: 5.1 kilo-ohms (typical)
Filtering Time: 1.5 ms (typical)
Common Type: External common (single common)
Input Current: 35 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 15,811,800 hrs (Standard: Telcordia SR332)

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

Digital Inputs: 16 channels
Type: source
On-state Voltage: 24 VDC nominal, 11 to 28.8 VDC
Off-state Voltage: 0 to 5 VDC
On-state Current: 6 mA/point @ 28.8 VDC (max.)
Input Impedance: 5.1 kilo-ohms (typical)
Filtering Time: 1.5 ms (typical)
Common Type: 16 channels for 2 COMs (single common)
Input Current: 40 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O flat cable 20-pin
MTBF: 11,694,600 hrs (Standard: Telcordia SR332)

M-1451: 4 digital inputs, 220 VAC

Digital Inputs: 4 channels, 220 VAC
On-state Voltage: 240 VAC nominal, 170 to 264 VAC
Off-state Voltage: 0 to 45 VAC
On-state Current: 12 mA/point @ 264 VAC (max.)
Input Impedance: 22 kilo-ohms (typical)
Common Type: 4 channels for 2 COMs (single common)
Input Current: 35 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 19,727,520 hrs (Standard: Telcordia SR332)

◦ Digital Output Modules

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

Digital Outputs: 8 channels
Type: sink
Output Range: 24 VDC nominal
On-state Voltage Drop: 0.3 VDC @ 25°C (max.)
On-state Current: 1 mA per channel (min.)
Off Leakage Current: 50 µA (max.)
Current Rating: 0.5 A per channel
Common Type: 8 channels per external common (single common)
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 13,884,600 hrs (Standard: Telcordia SR332)

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

Digital Outputs: 8 channels
Type: source
Output Range: 24 VDC nominal
On-state Voltage Drop: 0.3 VDC @ 25°C (max.)
On-state Current: 1 mA per channel (min.)
Off Leakage Current: 50 µA (max.)
Current Rating: 0.5 A per channel
Common Type: 8 channels per external common (single common)
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 14,340,120 hrs (Standard: Telcordia SR332)

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

Digital Outputs: 16 channels
Type: sink
Output Range: 24 VDC nominal
On-state Voltage Drop: 0.3 VDC @ 25°C (max.)
On-state Current: 1 mA per channel (min.)
Off Leakage Current: 50 µA (max.)
Current Rating: 0.5 A per channel
Common Type: 8 channels per external common (single common)
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O flat cable 20-pin
MTBF: 9,732,360 hrs (Standard: Telcordia SR332)

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

Digital Outputs: 16 channels
Type: source
Output Range: 24 VDC nominal
On-state Voltage Drop: 0.3 VDC @ 25°C (max.)
On-state Current: 1 mA per channel (min.)
Off Leakage Current: 50 µA (max.)
Current Rating: 0.5 A per channel
Common Type: 8 channels per external common (single common)
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O flat cable 20-pin
MTBF: 9,749,880 hrs (Standard: Telcordia SR332)

: Analog Input Modules

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

Analog Inputs: 8 channels
Resolution in Ranges: 12 bits, 3.91 µA/bit
Input Current Range: 4 to 20 mA (single-ended)
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
Input Current: 80 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 7,375,920 hrs (Standard: Telcordia SR332)

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

Analog Inputs: 8 channels
Resolution in Ranges: 12 bits, 2.44 mV/bit
Input Current Range: 0 to 10 VDC (single-ended)
Data Format: 16-bit integer (2's complement)
Accuracy:
 • ±0.1%, FSR @ 25°C
 • ±0.3%, FSR @ 0°C, 60°C
Input Impedance: 500 kilo-ohms
Conversion Time: 4 ms for all channels
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 7,288,320 hrs (Standard: Telcordia SR332)

: Analog Output Modules

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

Analog Outputs: 4 channels
Resolution in Ranges: 12 bits, 3.91 µA/bit
Output Current Range: 4 to 20 mA (single-ended)
Data Format: 16-bit integer (2's complement)
Accuracy:
 • ±0.1%, FSR @ 25°C
 • ±0.3%, FSR @ 0°C, 60°C
Output Impedance: 500 ohms (max.)
Conversion Time: 2 ms for all channels
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 7,840,200 hrs (Standard: Telcordia SR332)

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

Analog Outputs: 4 channels
Resolution in Ranges: 12 bits, 2.44 mV/bit
Output Current Range: 0 to 10 VDC (single-ended)
Data Format: 16-bit integer (2's complement)
Accuracy:
 • ±0.1%, FSR @ 25°C
 • ±0.3%, FSR @ 0°C, 60°C
Output Impedance: 5 kilo-ohms (max.)
Conversion Time: 2 ms for all channels
Input Current: 60 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 6,219,600 hrs (Standard: Telcordia SR332)

: Temperature Input Modules

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

RTDs: 2 channels
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 per 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: 500 kilo-ohms
Conversion Time: 200 ms for all channels
Diagnostics: Range over (if range over, data=Dx8000)
Input Current: 80 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 3,644,160 hrs (Standard: Telcordia SR332)

M-6201: 2 analog inputs, thermocouple

Thermocouples: 2 channels
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: 500 kilo-ohms
Conversion Time: 200 ms for all channels
Diagnostics: Range over (if range over, data=Dx8000)
Input Current: 80 mA @ 5 VDC
Isolation: I/O to logic (photocoupler isolation)
Wiring: I/O cable max. 14 AWG
MTBF: 3,828,120 hrs (Standard: Telcordia SR332)

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.)
MTBF: 19,569,840 hrs (Standard: Telcordia SR332)

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.)
MTBF: 75,528,720 hrs (Standard: Telcordia SR332)

M-7804: 0 VDC

Channels: 8
Mode: 0 VDC
MTBF: 73,750,440 hrs (Standard: Telcordia SR332)

M-7805: 24 VDC

Channels: 8
Mode: 24 VDC
MTBF: 73,750,440 hrs (Standard: Telcordia SR332)

Modular I/O Accessories

TB 1600: Screw-locking terminal block with 20-pin connector for DIN-rail mounts

Pins: 20 pins, one-to-one assignment
Connector Pitch: 3.81 mm
Mounting Type: DIN-rail
Dimensions: 77.5 x 67.5 x 51 mm
 (3.05 x 2.66 x 2.01 in)
Compliance: RoHS compliant



Cable: 20-to-20-pin flat cable

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



M-8001-PK: Removable terminal block

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



Markers: For the ioLogik 4000 series

M-8003-PK: Markers with 0 to 9 numbering; 100 pcs per box
M-8004-PK: Blank markers; 100 pcs per box



Ordering Information

Available Models

- M-1800:** Modular remote I/O module with 8 DIs, sink type, 24 VDC, RTB, -10 to 60°C operating temperature
- M-1801:** Modular remote I/O module with 8 DIs, source type, 24 VDC, RTB, -10 to 60°C operating temperature
- M-1600:** Modular remote I/O module with 16 DIs, sink type, 24 VDC, 20-pin, -10 to 60°C operating temperature
- M-1601:** Modular remote I/O module with 16 DIs, source type, 24 VDC, 20-pin, -10 to 60°C operating temperature
- M-1450:** Modular remote I/O module with 4 DIs, 110 VAC, RTB, -10 to 60°C operating temperature
- M-1451:** Modular remote I/O module with 4 DIs, 220 VAC, RTB, -10 to 60°C operating temperature
- M-2800:** Modular remote I/O module with 8 DOs, sink type, 24 VDC, RTB, -10 to 60°C operating temperature
- M-2801:** Modular remote I/O module with 8 DOs, source type, 24 VDC, RTB, -10 to 60°C operating temperature
- M-2600:** Modular remote I/O module with 16 DOs, sink type, 24 VDC, 20-pin, -10 to 60°C operating temperature
- M-2601:** Modular remote I/O module with 16 DOs, source type, 24 VDC, 20-pin, -10 to 60°C operating temperature
- M-2450:** Modular remote I/O module with 4 relays, 230 VAC/24 VDC, RTB, -10 to 60°C operating temperature
- M-3802:** Modular remote I/O module with 8 AIs, 4 to 20 mA, RTB, -10 to 60°C operating temperature
- M-3810:** Modular remote I/O module with 8 AIs, 0 to 10 VDC, RTB, -10 to 60°C operating temperature
- M-4402:** Modular remote I/O module with 4 AOs, 4 to 20 mA, RTB, -10 to 60°C operating temperature
- M-4410:** Modular remote I/O module with 4 AOs, 0 to 10 VDC, RTB, -10 to 60°C operating temperature
- M-6200:** Modular remote I/O module with 2 RTDs, RTB, -10 to 60°C operating temperature
- M-6201:** Modular remote I/O module with 2 TCs, RTB, -10 to 60°C operating temperature
- M-7001:** Modular remote I/O module with 24 VDC system power input, RTB, -10 to 60°C operating temperature
- M-7002:** Modular remote I/O module with 5/24/48 VDC or 110/220 VAC field power input, RTB, -10 to 60°C operating temperature
- M-7804:** Modular remote I/O module with 8 channels 0 VDC output, RTB, -10 to 60°C operating temperature
- M-7805:** Modular remote I/O module with 8 channels 24 VDC output, RTB, -10 to 60°C operating temperature

Optional Accessories

- TB 1600:** Screw-locking terminal block with 20-pin connector for DIN-rail mounting
- 20-to-20-pin flat 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:** Black marker, 100 pcs