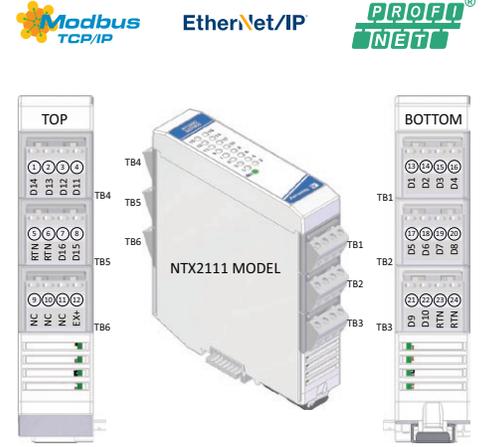
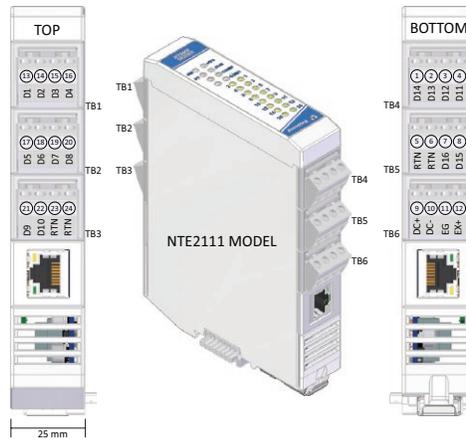


Ethernet I/O: BusWorks® NT Series

NT2110 Ethernet Discrete I/O Modules



16 discrete I/O ♦ Active low in / sinking out ♦ Ethernet I/O plus Expansion I/O ♦ Multi-protocol support

The BusWorks® NT2000 series offers a cost-effective, modular solution for Ethernet remote I/O systems. Two module types are available. NTE Ethernet models provide the protocol interface plus I/O signal processing channels. NTX expansion modules add extra I/O channels when mated to any NTE Ethernet communication module.

NT2110 modules offer 16 bidirectional discrete I/O channels for low-side (sinking switch) applications. NTE Ethernet models provide a compact network interface to monitor or control discrete device levels. Appending NTX expansion models can interface up to 64 discrete I/O channels on a single IP address.

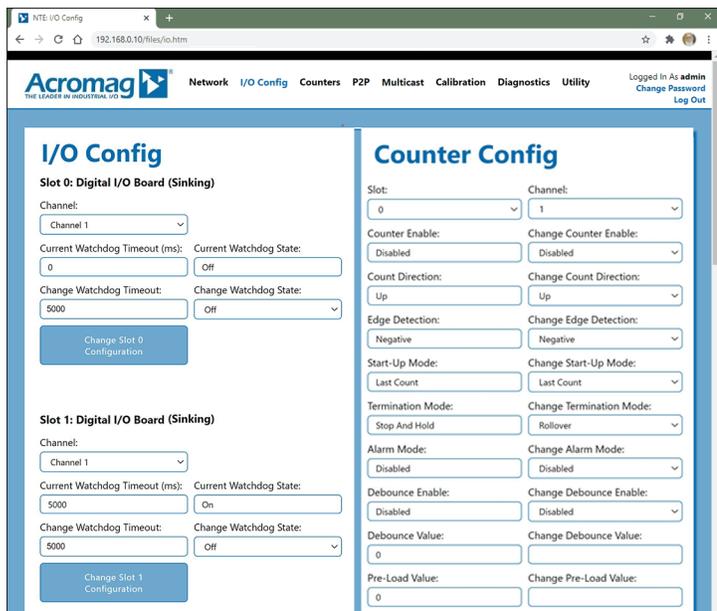
Applications include monitoring and control of relays, solenoids, contact closures, TTL logic, and discrete sensors on motors, lamps, valves, doors, etc.

An isolated RS-485 bus links up to three expansion modules to the Ethernet module with connectors that join along the DIN rail. This internal NT bus distributes power and communication between the modules. Users can mix analog, temperature, and discrete I/O modules across the NT bus.

Acromag's i2o® messaging technology allows direct peer-to-peer or multicast communication between remote modules without a master controller.

Key Features & Benefits

- Configured over Ethernet with web browser
 - Expandable I/O capacity, up to 64 I/O channels of mixed signal types on one IP address
 - Field-selectable Modbus TCP/IP, EtherNet/IP, or Profinet communication
 - i2o peer-to-peer or multicast communication
 - Dual RJ45 ports enable daisy chain topology
 - Inputs support TTL thresholds and up to 32V
 - Open-drain outputs switch up to 32V and 250mA
 - Tandem input/output channels allow loop-back monitoring of outputs
 - Configurable counters and totalization
 - *OPC-UA, *MQTT and *RESTful API IIoT support
 - Conditional logic for rule-based I/O operation
 - Advanced *alarm and *data logging functions
 - 1500V isolation between I/O, network, and power
 - Thin 25mm housing with pluggable terminals
 - Wide temperature operation (-40 to 70°C)
 - LED status indicators for visual troubleshooting
 - CE compliant. UL/cUL Class 1 Div 2 and ATEX/IECEx Zone 2 approvals
- * Coming soon. Consult factory for availability.



Easily configure I/O modules using any web browser.

Tel 877-214-6267 ■ sales@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA

Ethernet I/O: BusWorks® NT Series

NT2110 Ethernet Discrete I/O Modules

Performance Specifications

■ Ethernet Interface (NTE models only)

Communication

Configurable for Modbus TCP/IP, EtherNet/IP, and Profinet.

10/100Mbps data rate, auto-sensing.

IP Address

Default 192.168.0.10. Configurable static IP or DHCP.

■ Discrete Inputs (Active-Low)

Input Signal Voltage Range

0 to +32V DC.

Input Current

280µA, typical at 32V DC.

Input Signal Threshold

TTL compatible w/100mV of hysteresis, typical.

Low-to-High threshold: 1.7VDC, typical.

High-to-Low threshold: 1.6VDC, typical.

TTL logic limit - LOW: 0.8V DC max.

TTL logic limit - HIGH: 2.0VDC min.

Input Resistance

100K ohms typical (input only), 10K ohms w/ output pull-ups installed.

Input Hysteresis

100mV DC typical.

Input Response Time

5ms typical, not including network time.

Input Transient Voltage Suppressor

Installed at every I/O point, up to 38V working, 47V breakdown, and 77V clamping.

■ Discrete Outputs (Sinking)

Output "OFF" Voltage Range

0 to 32V DC.

Output "ON" Current Range

0 to 250mA DC, continuous.

Output Rds ON Resistance

0.8 ohms typical, 1.6 ohms maximum.

Protections

Thermal overload shutdown.

Over-voltage shutdown.

Over-load shutdown.

Reverse polarity protection shunt.

Output "OFF" Leakage Current

0.1µA typical, 50µA max (mosfet only, 25°C, 32V).

Does not include input bias current.

Output Response Time

5ms typical. Does not include network time.

■ Counters

Input Counter

Inputs (channels 1-8) may operate as up/down event counters for signals up to 85 Hz.

Counter Preload Value

Each channel can start from 0 to 4,294,967,295.

Counter Debounce

0 to 65,535ms to filter noise or relay chatter.

Counter Alarms

Alarms can toggle an output state upon reaching the termination value. Alarm state can auto-reset after the next count or hold/latch until reset.

FRAM

4Kb (4096 bits) non-volatile memory stores counter value.

■ General I/O

Input Update/Conversion Rate

Fresh data available to the network every 10ms.

Response Time from an Ethernet command

Less than 5ms, typical.

Excitation

External voltage of 4-32V required between I/O EXC and any RTN. Excitation must source 52mA minimum (at 32V). For 16 channels at 250mA max rated load, excitation must source 4A min.

I/O Pull-Ups (Internal)

Each I/O channel has 10KΩ pull-up to EXC to pull the tandem open drain output and input high/OFF.

■ Environmental and Physical

Temperature and Humidity

Operating: -40 to +70°C (-40 to +158°F).

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

Relative Humidity: 5 to 95%, non-condensing.

Isolation

1500V AC for 60 seconds and 250V AC or 354V DC continuous between I/O channels (group), each network port and power circuits.

Power Supply

10-32V DC SELV power wired to NTE model only.

Power to NTX models is via NT bus connection.

Power Consumption

NTE2111: <=2.0W (input).

NTX2111: <=0.5W max. (each).

Dimensions (width x height x depth)

NTE: 25 x 116.9 x 139.2 mm (0.98 x 4.6 x 5.48 inches).

NTX: 25 x 116.9 x 116.65 mm (0.98 x 4.6 x 4.59 inches).

Weight

NTE: 0.5 lbs (0.23 kg).

NTX: 0.3 lbs (0.14 kg).

■ Standards and Certifications

Electromagnetic Compatibility (EMC)
CE marked, per EMC Directive 2004/108/EC.

Safety Approvals

UL/cUL: Class I; Div 2; Groups A, B, C, D.

ATEX/IECEx: Zone 2.

Ordering Information

■ Models

[Go to on-line ordering page >](#)

NTE2111-1111

Ethernet I/O module with dual RJ45 ports, 16 discrete I/O channels.

NTX2111-0011

Expansion I/O module with 16 discrete I/O channels.

■ Accessories

5035-369

5035-370

Ethernet patch cable, low EMI, double-shielded. 3 feet (5035-369) or 15 feet (5035-370).

P55R-VB24

Power supply, 24V DC, 15W output.

See www.acromag.com for other sizes.



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