Ethernet I/O: BusWorks® NT Series

NT2120 Ethernet Discrete I/O Modules

CE | 24 HOUR STOCK ITEM | 2 YEAR WARRANTY | RoHS Compliant

Modbus TCP/IP | EtherNet/IP | PROFINET

TOP — NTE2121 MODEL — BOTTOM

TOP — NTX2121 MODEL — BOTTOM
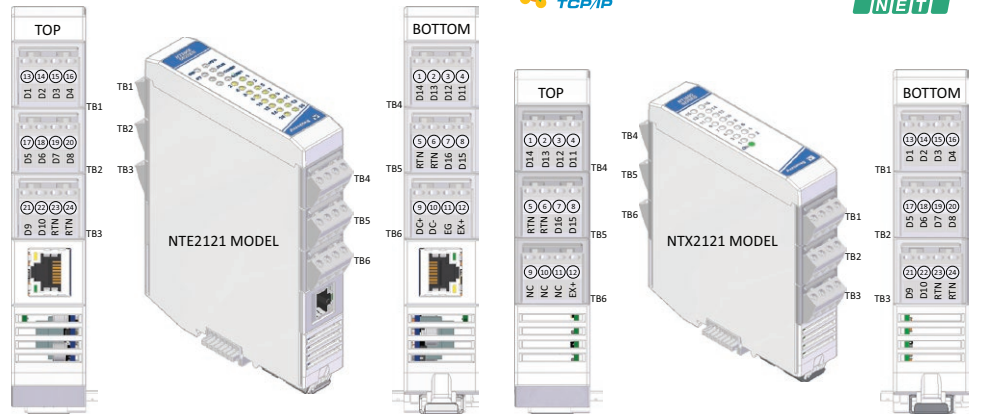
16 discrete I/O ◆ Active high in / sourcing out ◆ Ethernet I/O plus Expansion I/O ◆ Multi-protocol support

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.

NT2120 modules offer 16 bidirectional discrete I/O channels for high-side (sourcing 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)
- CE compliant. UL/cUL Class 1 Div 2 and ATEX/IECEx Zone 2 approvals
- LED status indicators for visual troubleshooting
    * Coming soon. Consult factory for availability.
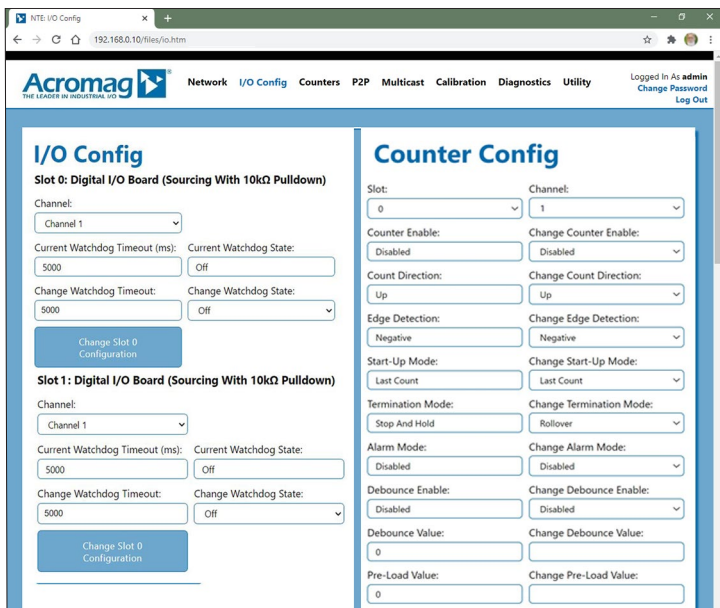
Easily configure I/O modules using any web browser.

Acromag — THE LEADER IN INDUSTRIAL I/O

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NT2120 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

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/ tandem output using internal pull-downs 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

Output "ON" Voltage Range
2 to 32V DC.

Active Current Limitation
Output limits load current to a shorted load at 0.6A typical, 0.4A-0.9A range.

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
50µA maximum per channel (mosfet only).
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
Excitation voltage of 6-32V required between field EXC and RTN terminals. Excitation must source 52mA minimum (at 32V). For 16 channels at maximum rated load, excitation must source 4A.

I/O Pull-Ups (Internal)
Each I/O channel has 10KΩ pull-down to I/O return and will never float.

■ 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
NTE2121: <=2.0W (input).
NTX2121: <=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

NTE2121-1111
Ethernet I/O module with dual RJ45 ports,
16 discrete I/O channels.

NTX2121-0011
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).

PS5R-VB24
Power supply, 24V DC, 15W output.

See www.acromag.com for other sizes.

ISO9001
AS9100

MADE IN USA

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