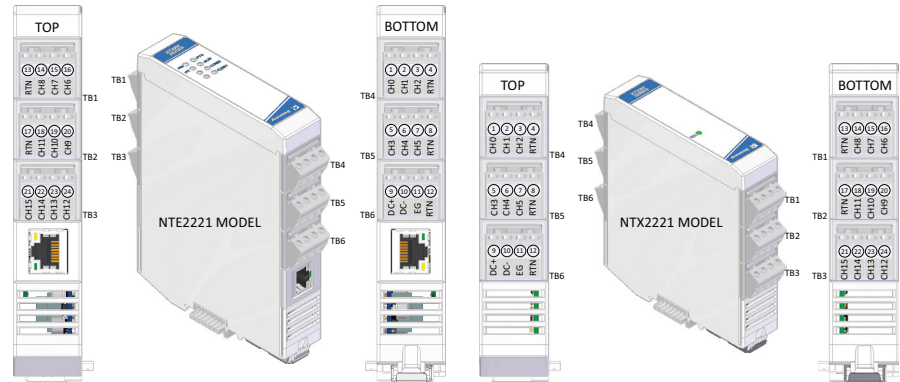




# Ethernet I/O: BusWorks® NT Series

## NT2220 Ethernet Analog I/O Modules



EtherNet/IP



### 16 single-ended current inputs ♦ 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.

NT2240 modules offer 16 current inputs. Each input supports bipolar and unipolar ranges with 16-bit A/D. NTE Ethernet models provide a compact network interface to monitor sensor levels or 4-20mA loops. Appending NTX expansion modules can interface up to 64 current inputs on a single IP address.

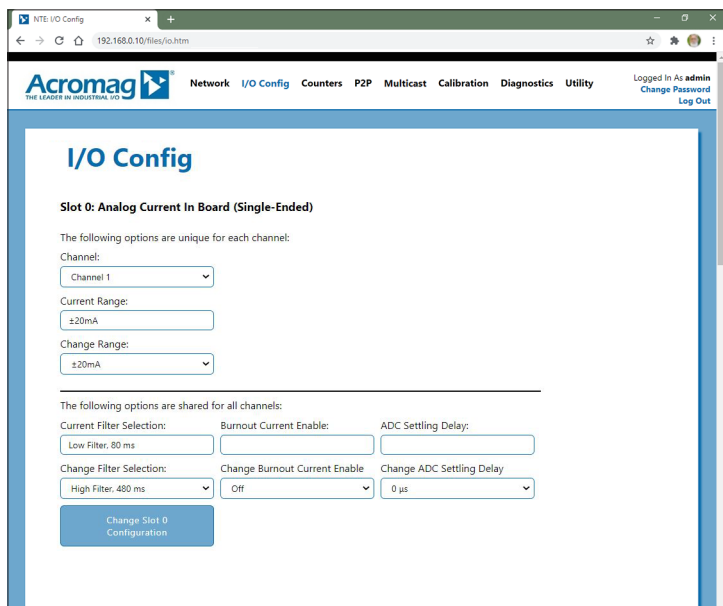
Applications include collecting pressure, level, flow, temperature, and other data at sensors, transducers, or transmitters. The 4-20mA current loop is the most common process control signal in many industries.

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
  - 16 single-ended current inputs that share common
  - Accepts  $\pm 20\text{mA}$ , 0/4-20mA, and 0/10-50mA input
  - Measures AC current input with optional sensor
  - LED status indicators for visual troubleshooting
  - \*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 (pending)
- \* Coming soon. Consult factory for availability.



*Easily configure I/O modules using any web browser.*



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# Ethernet I/O: BusWorks® NT Series

## NT2220 Ethernet Analog I/O Modules

### Performance Specifications

#### ■ Ethernet Interface (NTE models only)

##### Communication

Configurable for Modbus TCP/IP, Ethernet/IP, or Profinet. Ethernet/IP, Profinet support coming soon.

10/100Mbps data rate, auto-sensing.

##### IP Address

Default 192.168.0.10. Configurable static IP or DHCP.

#### ■ Analog Inputs

##### A/D Converter

16 input channels multiplexed to a 24 bit sigma-delta ADC through precision resistors and unity-gain buffers using a 16-bit bipolar conversion scheme.

##### Input Current Ranges

±20mA, 0-20mA, 4-20mA, 0-50mA and 10-50mA.

0-11.17mA range for use with 0-20A AC current sensing toroidal instrument transformer (5020-350).

Input channels are single-ended inputs that share a common return connection.

##### Input Accuracy

Better than ±0.05% of span typical, ±0.1% maximum.

##### Input Measurement Temperature Drift

Better than ±50ppm/°C (±0.0050%/°C).

##### Input Update/Conversion Rate

Response time will vary as filtering is increased. The fastest response time is less than 1ms typical.

##### Input Overvoltage Protection

Bipolar Transient Voltage Suppressors (TVS) with 5.5V clamp level. Inputs also include triple diode over-voltage clamps.

##### Input Impedance

49.9Ω shunt resistor.

##### Input Filter

Normal mode filtering fixed per input type.

#### ■ 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.

#### ■ 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

9-32V DC SELV power wired to NTE model only.

Power to NTX models is via NT bus connection.

##### Power Consumption

NTE2221: ≤1.5W (input).

NTX2221: ≤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 (pending).

ATEX/IECEx: Zone 2 (pending).

### Ordering Information

#### ■ Models

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

##### NTE2221-1111

Ethernet I/O module with dual RJ45 ports, 16 single-ended current inputs

##### NTX2221-0011

Expansion I/O module with 16 single-ended current inputs

#### ■ Accessories

##### 5020-350

Toroidal 0 to 20A AC current sensor.

##### 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](http://www.acromag.com) for other sizes.

ISO9001  
AS9100



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