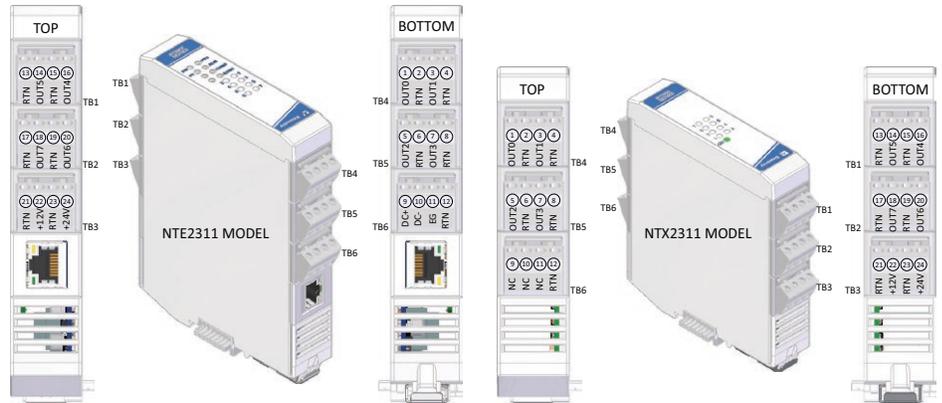


Ethernet I/O: BusWorks® NT Series

NT2310 Ethernet Analog Output Modules



EtherNet/IP



8 process current outputs ♦ 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.

NT2310 modules offer 8 current outputs. Each output is driven by a 16-bit DAC. NTE Ethernet models provide a compact network interface to control 4-20mA loops. Appending NTX expansion modules can interface up to 32 current outputs at a single IP address.

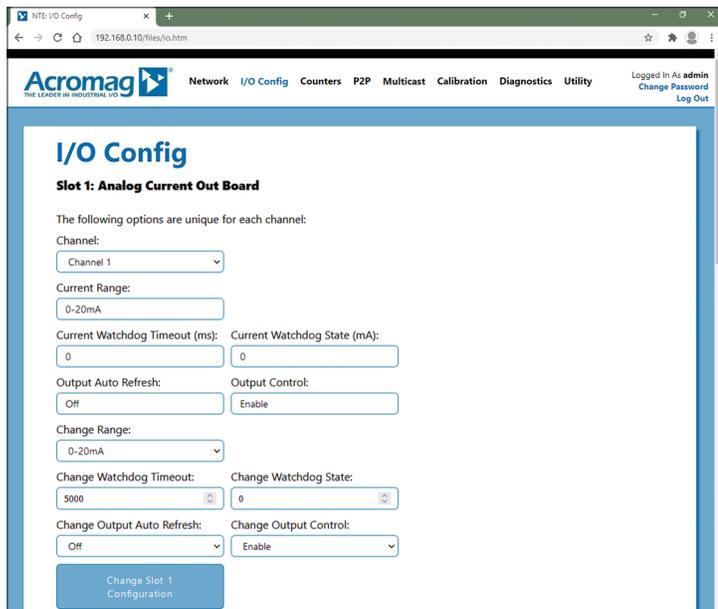
Applications include controlling analog actuator levels and driving recorders, displays, or other instruments. The outputs can control valves, pumps, and motors to regulate flow, level, or temperature.

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 56 I/O channels of mixed signal types at 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
 - Eight current outputs with 16-bit D/A resolution
 - Selectable 0-20mA or 4-20mA output range
 - 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.

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



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NT2310 Ethernet Analog Output Modules

Performance Specifications

■ Ethernet Interface (NTE models only)

Communication

Configurable for Modbus TCP/IP and 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 Outputs

A/D Converter

Eight current output channels driven by an octal 16-bit voltage DAC. Outputs share a return.

Output Current Ranges

Select 0-20mA or 4-20mA DC.
Maximum current is 22.6mA.

Output Accuracy

Factory calibrated to better than $\pm 0.1\%$ of span. Manual calibration of current outputs can improve accuracy to better than $\pm 0.05\%$.

Output Temperature Drift

Better than $\pm 60\text{ppm}/^\circ\text{C}$ ($\pm 0.0060\%/^\circ\text{C}$).

Output Load Resistance Range

0-600 ohms.

Output Excitation

Two separate excitation inputs, one for 12V power sources (10-15V) and one for 24V power (20-28V). Both excitation sources are diode-coupled allowing redundant excitation supplies.

Output Compliance

12.5V typical (with a 15V internal excitation rail). Output can typically drive 20mA full-scale into 625 ohms, or 22.6mA maximum into 550 ohms.

Output Update Rate

Outputs update when written and are continuously refreshed every 5 seconds.

■ General I/O

Input Update/Conversion Rate

Fresh data available to the network every 10ms.
Dependent on number of samples with averaging.

Response Time from an Ethernet command

Less than 5ms, typical.

■ Environmental and Physical

Temperature and Humidity

Operating: -40 to $+70^\circ\text{C}$ (-40 to $+158^\circ\text{F}$).
Storage: -40 to $+85^\circ\text{C}$ (-40 to $+185^\circ\text{F}$).
Relative Humidity: 5 to 95%, non-condensing.

Isolation

1500VAC HIPOT for 60 seconds with 250VAC/354VDC continuous isolation between output channels/excitation (as a group), network (each port), and input power.

Power Supply

10-32V DC SELV power wired to NTE model only.
Power to NTX models is via NT bus connection.

Power Consumption

NTE2311: 1.091W typical, 1.20W maximum.
NTX2311: 0.092W maximum (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 >](#)

NTE2311-1111

Ethernet I/O module with dual RJ45 ports,
8 current outputs.

NTX2311-0011

Expansion I/O module with 8 current outputs.

■ 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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