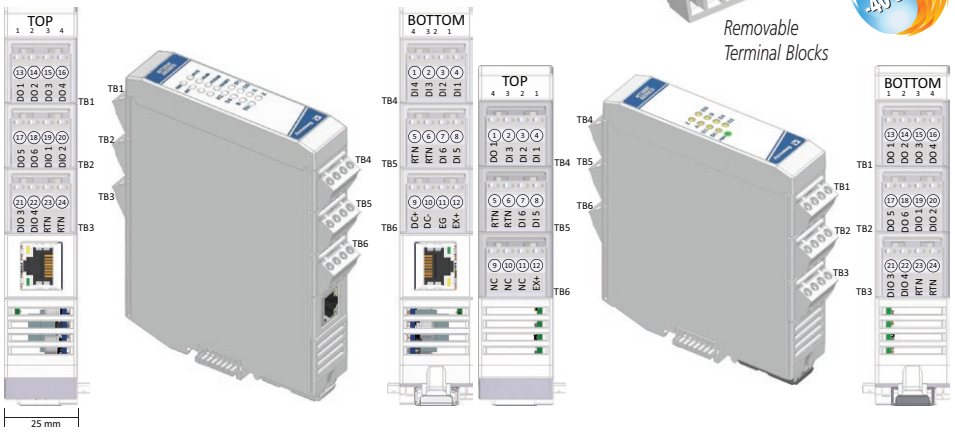
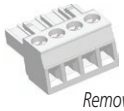
Ethernet I/O: BusWorks® NT Series

NT2710 Stepper Motor Controller Modules

CE 24 HOUR STOCK ITEM 2 YEAR WARRANTY RoHS Compliant





Removable Terminal Blocks

-40 to 70°C

Modbus TCP/IP
EtherNet/IP
PROFINET
i2o

Step/Direction PTO signals ◆ 4 GPIO ◆ Encoder Inputs ◆ Ethernet I/O & Expansion I/O ◆ Multi-protocol support

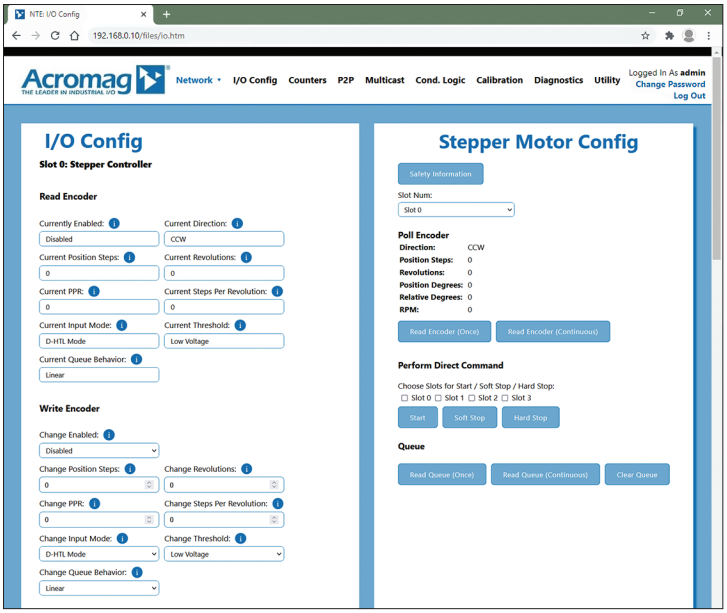
The BusWorks® NT2000 series offers a cost-effective, modular solution for Ethernet remote I/O systems. Two module types are available. NTE Ethernet models provide the protocol interface plus I/O signal processing channels. NTX expansion modules add extra I/O channels when mated to any NTE communication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

NT2710 modules provide 6 pulse train outputs, 4 general-purpose digital I/O, and encoder inputs for motion control applications using stepper motor drivers. A wide variety of commands are supported to precisely control the stepper motor position, speed and direction.

Applications include machining, packaging, positioning, dispensing, printing, and many other functions in industrial manufacturing.

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.



Easily configure I/O modules using any web browser.

Key Features & Benefits

- 3 differential or 6 single-ended inputs
- 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 (NTE)
- Single-axis motion control
- Pulse output voltages from 5-6V, 100mA peak
- 550Hz to 1MHz frequency output
- Quadrature encoder feedback
- Linear, triangular, or trapezoidal acceleration/deceleration
- High-resolution timer
- Differential signal pairs to reduce noise
- 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 (as a group), network, and power
- CE compliant, hazardous location approvals pending

* Coming soon. Consult factory for availability.

Acromag® THE LEADER IN INDUSTRIAL I/O

Tel 844-878-2352 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 S. Wixom Rd, Wixom, MI 48393-2417 USA

Ethernet I/O: BusWorks® NT Series

Performance Specifications

Ethernet Interface (NTE models only)

Connections
Dual metal shielded RJ-45 sockets, 8-pin 10/100Mbps, automatic sensing of data rate, half/full duplex, and cable crossover.

Default IP Address
192.168.0.10, Static IP or via DHCP network server assignment, user-configured by program (preset) or web-page, or optionally loaded from NV memory of unit.

Application Protocol
Web-Page Configurable for Modbus TCP/IP, Ethernet/IP, or Profinet.

Step Motor Controls

Pulse Train Output
Signals: Step (CW) +/-, Direction (CCW) +/-, Enable +/-.
Single ended PTO: frequency speeds from 550Hz to 100KHz.
Differential PTO: frequency speeds from 550Hz to 1MHz.

Encoder Input
Signals: A+/-, B+/-, Z+/-

Input Format: 3 differential pairs or 6 single-ended inputs
Captures input from frequency speeds up to 250KHzz.

General Purpose I/O
Four single-ended GPIO signals (sourcing).

Motor Control Signals
- Step/Direction or CW/CCW mode
- Single-Ended or Differentially Paired I/O
- Motor Steps/Rev
- Micro-Stepping Amount
- Encoder Feedback
- Encoder PPS speed
- Acceleration

Motor Control Commands
- Relative Move
- Absolute Move
- Jog
- Blend Move
- Encoder Follow
- Soft Stop
- Hard Stop

Profiling
- Linear Acceleration/Deceleration
- Triangular S-Curve Acceleration/Deceleration
- Trapezoidal S-Curve Acceleration/Deceleration

GPIO Functions
- Switch
- Emergency Stop
- Home Input
- Position Capture
- General Purpose Digital I/O

Discrete Inputs

Input Signal Voltage Range
0 to +6V 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.

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.

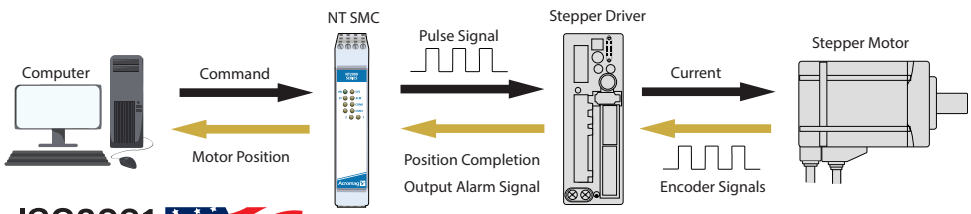
General I/O

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.



ISO9001
AS9100
MADE IN USA

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 input power.

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

Power Consumption (excluding excitation)
NTE2000: <=1.36W (input)
NTX2000: <=0.142W max. (each)

Shock, Operating
25G, 11ms half-sine, 18 shocks at 6 orientations per IEC 60068-2-27.

Vibration, Operating
4G, 10-500 Hz, 2 Hours/axis for sinusoidal vibration per IEC 60068-2-6.

4G-rms, 10-500 Hz, 2 Hours/axis for random vibration per IEC 60068-2-64.

Dimensions (width x height x depth)
NTE: 20.0 x 116.9 x 139.2 mm (1.96 x 4.60 x 5.48 inches).
NTX: 25.0 x 116.9 x 116.65 mm (0.98 x 4.60 x 4.59 in.).

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
Hazardous locations approvals pending.

Ordering Information

Models

Go to on-line ordering page >

NTE2711-1111
Ethernet I/O stepper motor controller module with dual RJ45 ports

NTX2711-0011
Expansion I/O stepper motor controller module

Accessories

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

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

See www.acromag.com for other sizes.

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