



Ethernet I/O: BusWorks® NT Series

NT2710 Stepper Motor Controller Modules

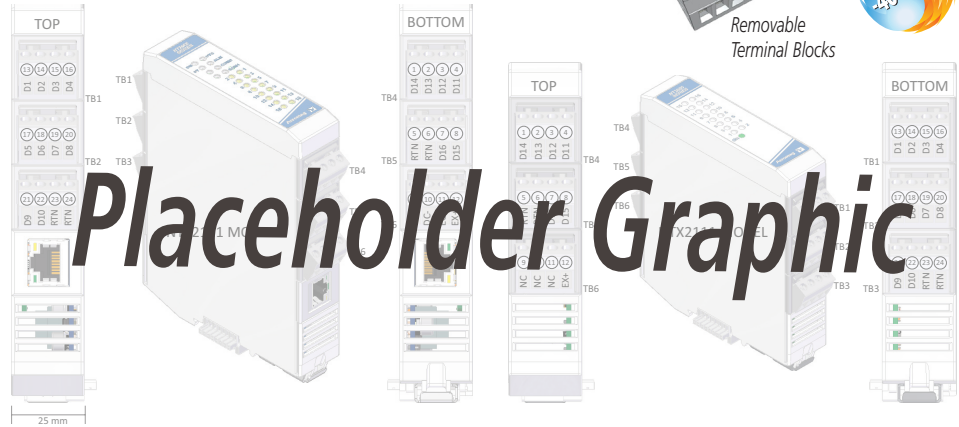
**PRELIMINARY
DATA
SUBJECT
TO
CHANGE
INFORMATION**



Removable
Terminal Blocks



EtherNet/IP



Placeholder Graphic

2 step/direction PTO signals ♦ 4 GPIO ♦ 3 Encoder 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. Three module types are available. NTE Ethernet and NTW Wi-Fi models provide the protocol interface plus I/O signal processing channels. NTX expansion modules add extra I/O channels when mated to any NTE or NTW communication module.

NT2710 modules provide pulse train output, general-purpose I/O, and encoder signals 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.

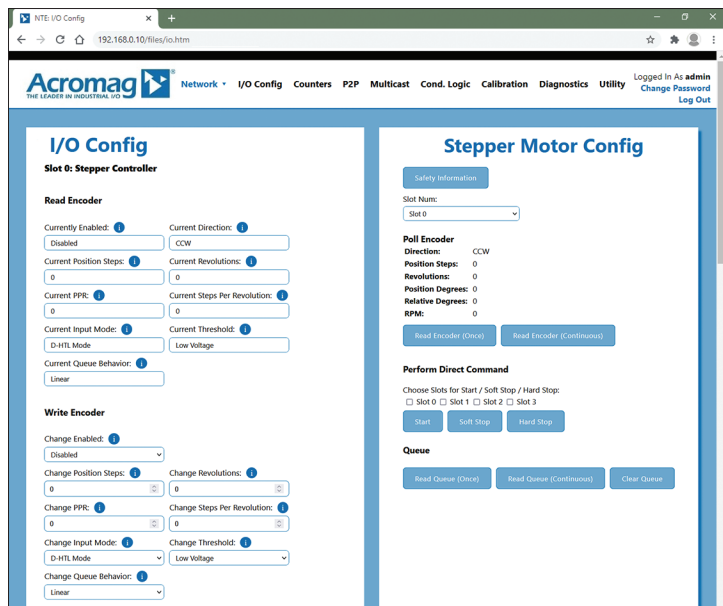
Applications include machining, packaging, positioning, dispensing, printing, and many other functions in industrial manufacturing.

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 multicast communication between remote modules without a master controller.

Key Features & Benefits

- Configured over Ethernet with web browser
- Expandable I/O capacity, up to 58 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)
- Wireless 802.11abgn 2.4/5GHz Wi-Fi (NTW)
- Single-axis motion control
- Pulse output voltages from 5-24V, 5W 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, network, and power
- CE compliant.
- * Hazardous location approvals pending
- * Coming soon. Consult factory for availability.



Easily configure I/O modules using any web browser.



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)

Communication

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

10/100Mbps data rate, auto-sensing.

IP Address

Default 192.168.0.10. Configurable static IP or DHCP.

■ WiFi Interface (NTW models only)

Wireless communication

Wi-Fi 802.11 a/b/g/n, 2.4 and 5 GHz ISM bands.

IEEE 802.3 10/100 Mbps Ethernet (RMII).

Dual U.FL ports for omni-directional antennae.

Wi-Fi Security

WPA/WPA2/WPA3.

SSL/TLS 1.2 with X.509 certificate management.

RF Certification

FCC, IC, ETSI, Japan, AU/NZS, China.

■ Motor Control

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+/-

Captures input from frequency speeds up to 250KHz.

General Purpose I/O

Four single-ended GPIO signals (sourcing).

Motor Control Signals

- Step/Direction or CW/CCW mode
- Single-Ended or Differentially Paired mode
- Motor Steps/Rev
- Micro-Stepping Amount
- Encoder Feedback
- 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

- CCW Limit Switch
- Emergency Stop
- Home Input
- Position Capture
- External I/O

■ 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.

■ 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.

■ 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/NTW models only.

Power to NTX models is via its NT bus connection.

Power Consumption

NTE2000: <=1.36W (input)

NTW2000: 5.5-6V out, up to 5W peak.

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).

NTW: 50.0 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).

NTW: 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 >

NTE2710

Ethernet I/O module with dual RJ45 ports

NTW2710

Ethernet I/O module with Wi-Fi communication

NTX2710

I/O stepper motor controller module

■ Accessories

5035-369

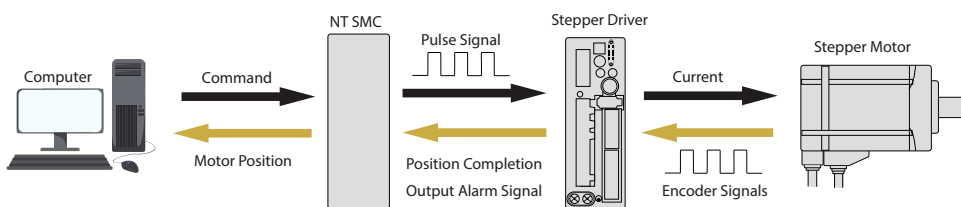
5035-370

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.



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