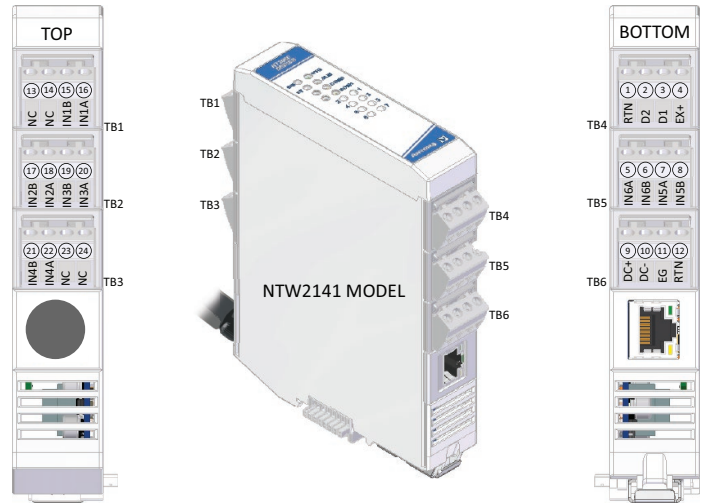


# Wireless I/O: BusWorks® NTW Series

## NTW2140 Wi-Fi Ethernet Discrete AC Input Modules



6 discrete AC inputs ♦ 2 discrete DC I/O ♦ Ethernet I/O plus Expansion I/O ♦ Multi-protocol support

BusWorks® NTW2000 modules offer a cost-effective, wireless solution for Ethernet remote I/O systems. NTW Wi-Fi models provide the protocol interface plus I/O signal processing channels. Connecting NTX expansion modules can add extra I/O channels or a mix of signal types over a single Wi-Fi interface.

NTW2140 modules offer 6 AC optocoupler inputs for sensing on/off power status plus 2 DC logic I/O. Each module has an embedded wireless IoT gateway providing a Wi-Fi interface to monitor or control discrete device levels. An RJ45 port provides additional flexibility for a cabled network interface.

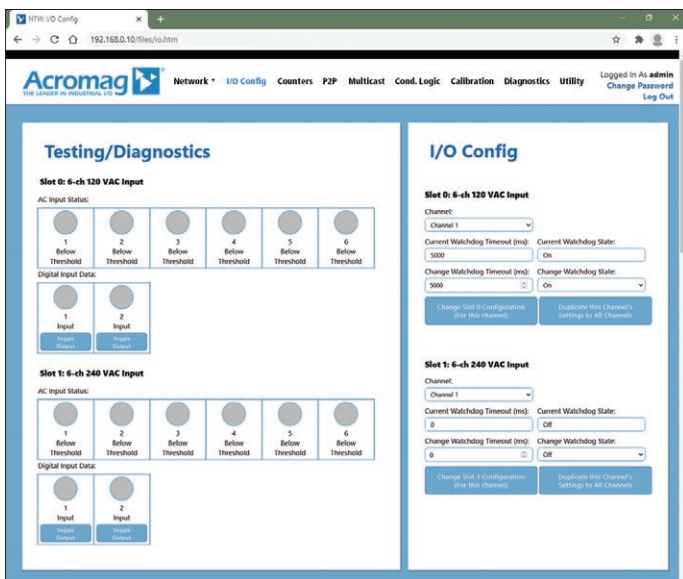
Applications include monitoring on/off levels of proximity, limit and toggle switches, or push buttons, contact closures and AC voltage power levels for a wide variety of industrial devices.

An isolated RS-485 bus links up to three NTX expansion modules to the NTW Wi-Fi module with connectors that join units along the DIN rail. This internal NT bus distributes power and communication between the modules. Users can mix temperature, current, voltage, and discrete I/O modules across the NT bus.

Acromag's i2o® messaging technology allows direct peer-to-peer communication between remote modules without a master controller.

### Key Features & Benefits

- Wireless 802.11 a/b/g/n dual-band 2.4 and 5 GHz Wi-Fi interface
- 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 or EtherNet/IP communication
- i2o peer-to-peer communication
- RJ45 port enables cable connections
- Six individually isolated 120/240V AC discrete input channels for AC voltage levels
- Two bidirectional DC input/output channels for monitor/controlling TTL/0-32V logic levels
- Tandem DC input/output channels allow loop-back monitoring of outputs
- OPC-UA, MQTT and RESTful API IIoT support
- Conditional logic for rule-based I/O operation
- 1500V isolation between I/O, network, and power
- Thin 25mm housing with pluggable terminals
- Wide temperature operation (-40 to 70°C)
- LED status indicators for visual troubleshooting
- CE compliant. UL/cUL Class 1 Div 2 and ATEX/IECEx Zone 2 approvals (pending)



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



# Wireless I/O: BusWorks® NTW Series

## NTW2140 Wi-Fi Ethernet Discrete AC Input Modules

### Performance Specifications

#### ■ Ethernet Interface

##### Communication

Configurable for Modbus TCP/IP and EtherNet/IP.

10/100Mbps data rate, auto-sensing.

##### IP Address

Default 192.168.0.10. Configurable from static IP or via WLAN using DHCP

#### ■ Wi-Fi Interface

##### Wireless Communication

Dual Band 2.4/5GHz Wi-Fi interface.

IEEE 802.11a/b/g up to 54Mbps.

IEEE 802.11n up to 150Mbps.

IEEE 802.11r fast roaming.

##### Data Rate

Fixed 100Mbps, full-duplex (not auto-negotiated).

##### Wi-Fi Security

WPA3 / TLS 1.2 with PKI and X.509 certificate management. AES 256-bit encryption.

##### Antenna

Single external UFL antenna wired to external whip/tilt type antenna using an RP-SMA connector. 2.15dBi.

Dimension (straight): 108.5 x 10 mm (4.27 x 0.39").

Dimension (bent): 31.5 x 87 mm (1.24 x 3.43").

##### Communication Distance

100 meters line-of-sight, typical.

##### RF Certification

USA (FCC Part 15), Canada (IC RSS), EU (RED), Japan (MIC), China (SRRC), AU/NZS.

#### ■ AC Discrete Inputs

##### Input Type

Six individually isolated AC voltage inputs to detect AC voltage levels. Built-in hysteresis provides a sensing threshold for monitoring AC line voltage.

##### Input Signal Voltage Range

120V AC: 0 to 130V<sub>RMS</sub>, ±184V DC.

220V AC: 0 to 240V<sub>RMS</sub>, ±340V DC.

##### Input Signal Threshold – 120V AC

Low-to-High threshold: 77V AC, 109V DC, typical.

High-to-Low threshold: 77V AC, 107V DC, typical.

##### Input Signal Threshold – 240V AC

Low-to-High threshold: 176V AC, 249V DC, typical.

High-to-Low threshold: 173V AC, 245V DC, typical.

##### Input Current

NTW2141: 1.1mA<sub>ARMS</sub> at 120V AC.

NTW2142: 1.7mA<sub>ARMS</sub> at 240V AC.

##### Input Response Time

20ms, typical.

##### Input Overvoltage Protection

Each channel includes a Metal Oxide Varistor (150V or 275V AC) and capacitively couples AC to an optocoupler circuit. Rated continuous input voltage is 130V AC (NT2141) or 240V AC (NT 2142).

#### ■ DC Discrete Inputs

##### Input Type

Two bidirectional discrete I/O channels with active low inputs and tandem open-drain outputs.

##### Input Signal Voltage Range

0 to +32V DC.

##### Input Current

150µA, typical at 32V DC.

##### Input Signal Threshold

TTL compatible w/100mV DC with hysteresis included.

TTL logic limit - LOW: 0.8V DC max.

TTL logic limit - HIGH: 2.0V DC min.

##### Input Resistance

200K ohms (input only), 10K ohm output pull-up to Exc.

##### 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.

#### ■ DC Discrete Outputs

##### Output Type

Two bidirectional discrete I/O channels with open-drain outputs and tandem active low inputs.

##### Output "OFF" Voltage Range

0 to 32V DC.

##### 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.

##### Output "OFF" Leakage Current

0.1µA typical, 50µA max (mosfet only, 25°C, 32V).

Does not include input bias current.

##### Output Response Time

5ms typical. Does not include network time.

#### ■ Counters

##### Input Counter

Inputs (DC DIO channels 1-2) 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.

#### ■ 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 field I/O group, network port group, and input power circuit. This model adds additional AC input Isolation (field I/O input group)

##### Power Supply

10-32V DC SELV power wired to NTW models only.

Power to NTX models is via NT bus connection.

4-32V field excitation per I/O.

##### Power Consumption

NTW2141/2142: 1.92W (AC High).

##### Dimensions (width x height x depth - w/o antenna)

NTW: 25 x 116.9 x 139.2 mm (0.98 x 4.6 x 5.48 inches).

##### Weight

NTW: 0.5 lbs (0.23 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 >](#)

NTW2141-1111 (120V AC)

NTW2142-1111 (240V AC)

Wi-Fi Ethernet I/O module with one RJ45 port,

6 AC discrete inputs and 2 DC discrete I/O

#### ■ Expansion I/O Modules

See [Acromag.com/NT](#) for a full list of NTX Expansion I/O Units.

#### ■ 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.