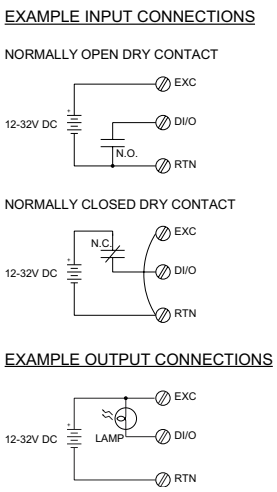
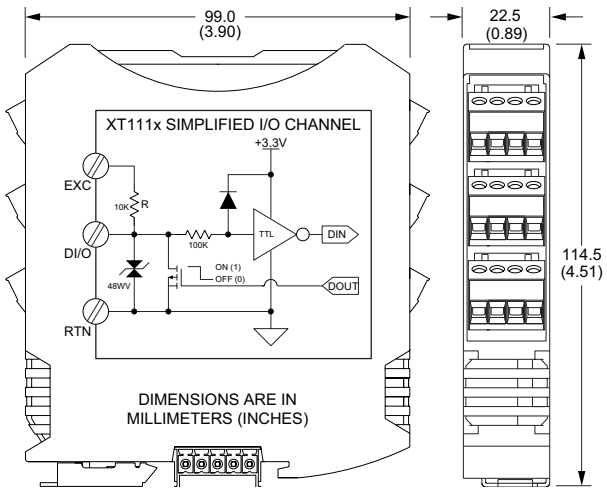
Ethernet I/O: BusWorks® XT Series

XT1110 Ethernet Discrete I/O Modules (sinking outputs)





16 discrete tandem input/output channels ◆ Modbus TCP/IP, Ethernet/IP, Profinet, or i2o communication

Description

The XT1110 interfaces discrete I/O signals between measurement and control devices over Ethernet. Channels are individually configurable for input or low-side switched output operation.

Rugged construction, high density design, and easy USB-to-PC/Windows setup combine for a very effective I/O solution. These units are ideal for remote monitoring, distributed control, or SCADA applications.

Input/Output Ranges

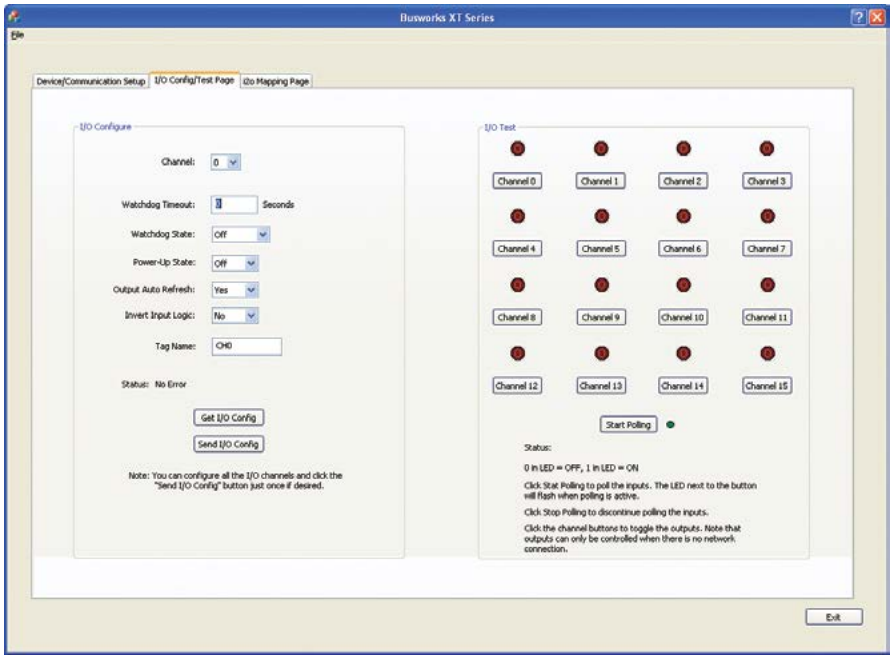
Input: 0-32V DC, TTL thresholds
Output: 0-32V DC, open-drain, up to 250mA

Ethernet Communication

Modbus TCP/IP, Ethernet/IP, Profinet, i2o® peer-to-peer, 10/100Base-T(X)
PriorityChannel™ device determinism

Power Requirement

12 to 32V DC (2.5W)



BusWorks XT software (download free from www.acromag.com) allows you to configure I/O modules offline with USB, save the file, and download settings into units later, at your convenience.

Key Features & Benefits

- 16 solid-state discrete I/O channels (any mix of inputs or outputs)
- Built-in 10K ohm pull-up resistors for 2/3-wire sensors (contacts, proximity, TTL)
- Configurable normal/reverse input logic
- Outputs include built-in read-back capability
- Easy setup with Windows software via USB
- Watchdog timer control of failsafe outputs
- Continuously changing "heart-beat" register validates module operation
- High-Density 22.5mm wide package with pluggable, front-facing terminals
- Dual Ethernet 10/100 ports (auto-negotiation) reduce switch port requirements
- 1500V AC isolation (between I/O, power, and network ports) and surge/transient protection
- Supports bussed/rail and redundant power
- -40°C to +70°C wide temperature operation
- Withstands 25g shock and 4g vibration
- CE and UL/cUL Class 1 Div 2 Zone 2 approvals. ATEX Certified.

Acromag® THE LEADER IN INDUSTRIAL I/O

Tel 248-295-0880 ■ Fax 248-624-9234 ■ sales@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA

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Performance Specifications

IMPORTANT: To prevent damage or errors from grounded PCs and surges, Acromag strongly recommends use of the USB-ISOLATOR when configuring an XT1000 I/O module.

USB Interface

USB Connector
Type: USB Mini-B type socket, 5-pin.
Data rate: 12Mbps. USB v1.1 and 2.0 compatible.
Maximum cable length: 5.0 meters.

USB Transient Protection
Transient voltage suppression on power and data lines.

Driver
Not required. Uses Windows HID drivers.

Input

Input Type
16 active-low, buffered inputs, with a common connection. Inputs are tied in tandem to output drains for optional loopback monitoring of output state.

Input Signal Voltage Range
0 to 32V DC.

Input Current
280µA, typical at 32V DC.

Input Signal Threshold
1.7V typical with100mV of hysteresis.

Input Resistance
100K ohms, typical.

Input Response Time
10ms, nominal.

Output

Output Type
16 open-drain, smart, n-channel mosfet switches with a common source connection. Provides low-side (sinking) switching between the load and return.

Output Voltage
0 to 32V DC.

Output "ON" Resistance
0.8 ohms typical, 1.6 ohms maximum.

Output "ON" Current Range
0 to 250mA DC, continuous (up to 4A total for all 16 channels combined). See Operating Temperature specification for effect of channels at full load. See manual for detailed effects of operating temperature.

Output Response Time
10ms, nominal.

Ethernet Communication

Protocols
Modbus TCP/IP, i2o peer-to-peer, Ethernet/IP, or Profinet depending on model number.

Ethernet Communication Controller
Innovasic RapID™ Platform with PriorityChannel™ for determinism at the device regardless of network load.

Modbus TCP/IP (slave)
Port 502 reserved. Supports up to 10 sockets.

i2o Peer-to-Peer (master/slave)
Can map 4-channel input groups to output groups at two destination IP addresses. Timed or change-of-state updates. Supports GPRS/GSM systems.

Ethernet/IP (adapter)
Supports 16 connections. EDS file on website.

Profinet (server)
Supports 1 connection. GSDML file on website.

Connectors
Two shielded 8-pin RJ-45 sockets, 10BaseT/100BaseTX.

Wiring
Auto-crossover for MDI or MDI-X.

IP Address
User-configurable. 128.1.1.100 default static IP address.

Data Rate
Auto-negotiated, 10Mbps or 100Mbps.

Compliance
IEEE 802.3, 802.3u, 802.3x.

Environmental

Operating temperature
-40 to 70°C (-40 to 158°F). Max temperature derates -0.625°C per output channel at full load (250mA).

Storage temperature
-40 to 85°C (-40 to 185°F).

Relative humidity
5 to 95% non-condensing.

Power Requirement
12 to 32V DC (102mA maximum @ 24V).

Isolation
4-way isolation between I/O channels, network (each port), and power.
Peak: 1500V AC, ANSI/ISA-82.01-1988.
Continuous: 250V AC, 354V DC.

Shock and Vibration Immunity
Vibration: 4g, per IEC 60068-2-64.
Shock: 25g, per IEC 60068-2-27.

Electromagnetic Compatibility (EMC) Compliance
Radiated Emissions: BS EN 61000-6-4, CISPR 16.
RFI: BS EN 61000-6-2, IEC 61000-4-3.
Conducted RFI: BS EN 61000-6-2, IEC 61000-4-6.
ESD: BS EN 61000-6-2, IEC 61000-4-2.
EFT: BS EN 61000-6-2, IEC 61000-4-4.
Surge Immunity: BS EN 61000-6-2, IEC 61000-4-5.

Approvals
CE compliant. UL/cUL Class I; Div. 2 Zone 2. ATEX Cert.
Ⓔx II 3 G Ex nA IIC T4 Gc -40°C ≤ Ta ≤ +80°C

Physical

General
General purpose plastic enclosure for mounting on 35mm "T-type" DIN rail.

Case Material
Self-extinguishing polyamide, UL94 V-0 rated, color light gray. General purpose NEMA Type 1 enclosure.

Circuit Board
Military grade fire-retardant epoxy glass (IPC-4101/98).

I/O Connectors
Removable plug-in type terminal blocks rated for 12A/250V; AWG #26-12, stranded/solid copper wire.

Dimensions
Width = 22.5mm (0.9 inches), Length = 114.5mm (4.51 inches), Depth = 99.0mm (3.90 inches).

Shipping Weight
0.5 pounds (0.22 Kg) packed.

Ordering Information

Models

XT1111-000
Digital I/O module, Modbus/TCP and i2o protocol.

XT1112-000
Digital I/O module, Ethernet/IP protocol.

XT1113-000
Digital I/O module, Profinet protocol.

Software

XT-SIP (recommend one kit per customer)
Software Interface Package. Includes software (XT-CONFIG), isolator (USB-ISOLATOR), two USB cables (4001-112, 4001-113), Ethernet cable (5035-360).

Accessories

XTA-120V-6
XTA-240V-3
6-channel 120V AC/DC or 3-channel 240V AC/DC discrete input module with 5V DC logic outputs. Interfaces with sinking/sourcing DC Inputs.

XTA-MRNO-6
6-ch mechanical relay output module, Form A, SPST normally open 5A relays (5/12/24V DC logic input).

XTBUS-KIT
DIN rail bus power/excitation connector kit. Includes one DIN rail bus connector (1005-070), one left-side female connector terminal block (1005-220) and one right side male connector terminal block (1005-221).

USB-ISOLATOR
USB-to-USB isolator, includes USB cable (4001-112).

ISO9001
AS9100
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