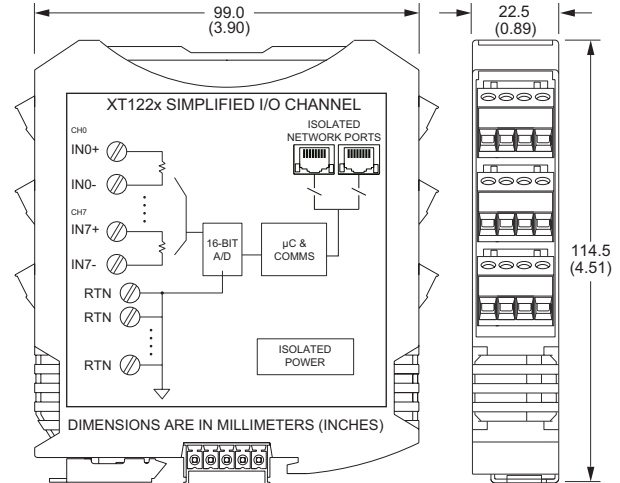
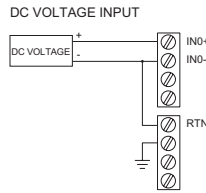


# Ethernet I/O: BusWorks® XT Series

## XT1220 Ethernet Analog Voltage Input Modules



### EXAMPLE INPUT CONNECTIONS



8-channel differential analog voltage input ♦ Modbus TCP/IP, Ethernet/IP, Profinet, or i2o communication

### Description

The XT1220 offers an isolated Ethernet network interface for up to eight differential voltage input channels. Isolated differential inputs deliver better measurements, superior noise rejection, and eliminate the need for signal isolators.

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

### Input Ranges

±5V, ±10V, 0 to 5V, 0 to 10V.

### Ethernet Communication

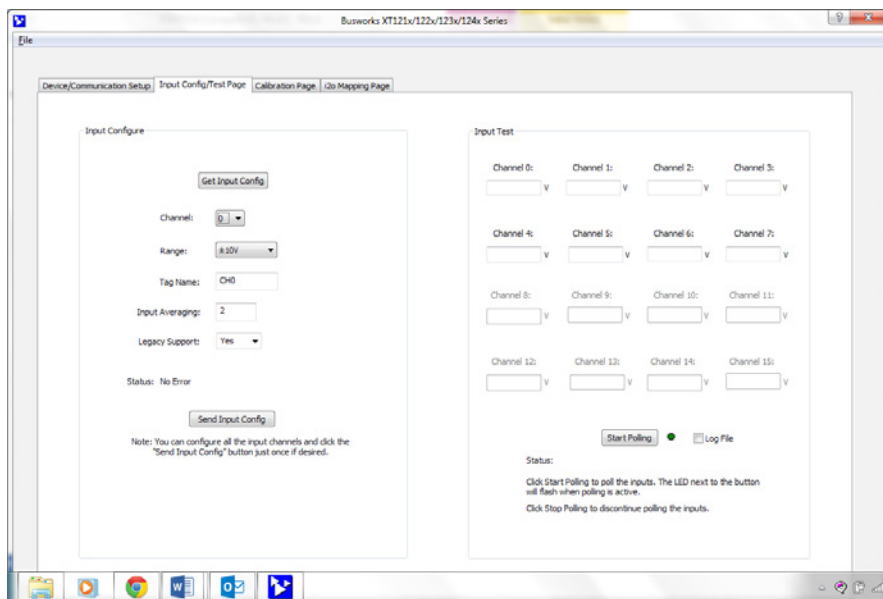
Modbus TCP/IP, Ethernet/IP, Profinet, i2o® peer-to-peer, 10/100Base-T(X) PriorityChannel™ device determinism

### Power Requirement

12 to 32V DC (2.8W)

### Key Features & Benefits

- Easy setup with Windows software via USB
- High input impedance (100K ohms) reduces loading on voltage loops
- User-configurable sample averaging (1-200) on a per-channel basis
- 10ms network updates for all 8 input channels
- i2o peer-to-peer updates based on percent-of-change and/or timed updates
- High-resolution 16-bit  $\Sigma-\Delta$  A/D converter ensures precise, high accuracy measurements
- 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 compliant. UL/cUL Class 1 Div 2 Zone 2 approval



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

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# Ethernet I/O: BusWorks® XT Series

## XT1220 Ethernet Analog Input Modules

### 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

##### Accuracy

±0.05% of span, typical for nominal input ranges.

##### Analog to Digital Converter (A/D)

16-bit  $\Sigma\text{-}\Delta$  converter. 334.85uV/bit resolution.

##### Noise Rejection

Better than -110dB @ 60Hz.

##### Input Filter Bandwidth

-3dB at 25KHz, typical.

##### Input Conversion Rate

10ms for all 8 input channels.

##### Input Impedance

100.2K ohms.

#### ■ 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 each of 8 analog input channels separately to output channels. Timed (1-65535 sec) or percent-of-change updates. Supports GPRS/GSM systems.

##### Ethernet/IP (adapter)

Supports 10 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. 192.168.1.100 default 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).

##### Storage temperature

-40 to 85°C (-40 to 185°F).

##### Relative humidity

5 to 95% non-condensing.

##### Power Requirement

12 to 32V DC, 2.8W maximum  
(116mA 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 listed.

Designed for Class I; Division 2; Groups ABCD; Zone 2.

#### ■ 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

##### XT1221-000

8-channel differential voltage input module, Modbus/TCP and i2o protocol.

##### XT1222-000

8-channel differential voltage input module, Ethernet/IP protocol.

##### XT1223-000

8-channel differential voltage input 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

##### 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).

##### PSSR-SD24

Power supply (24V DC, 2.5A).

##### DIN RAIL 3.0

##### DIN RAIL 16.7

DIN rail strip, Type T, 3 inches (75mm) or 16.7 (425mm).

##### 20RM-16-DIN

19" rack-mount kit with DIN rail.