

## Product Datasheet - Technical Specifications



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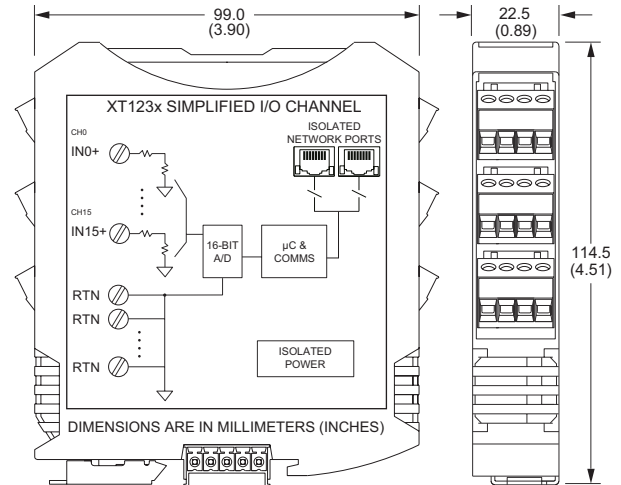
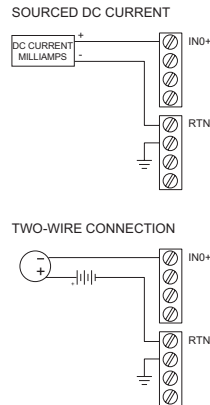
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# Ethernet I/O: BusWorks® XT Series

## XT1230 Ethernet Analog Input Modules



### EXAMPLE INPUT CONNECTIONS



16-channel single-ended analog current input ♦ Modbus TCP/IP, Ethernet/IP, Profinet, or i2o communication

### Description

The XT1230 offers an isolated Ethernet network interface for up to sixteen single-ended current input channels. Single-ended inputs enable a higher channel density to save space and a lower cost per channel.

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

DC Current:  
0 to 11mA, 0 to 20mA, 4 to 20mA, ±20mA.  
0 to 20 amps AC (with optional AC sensor)

### Ethernet Communication

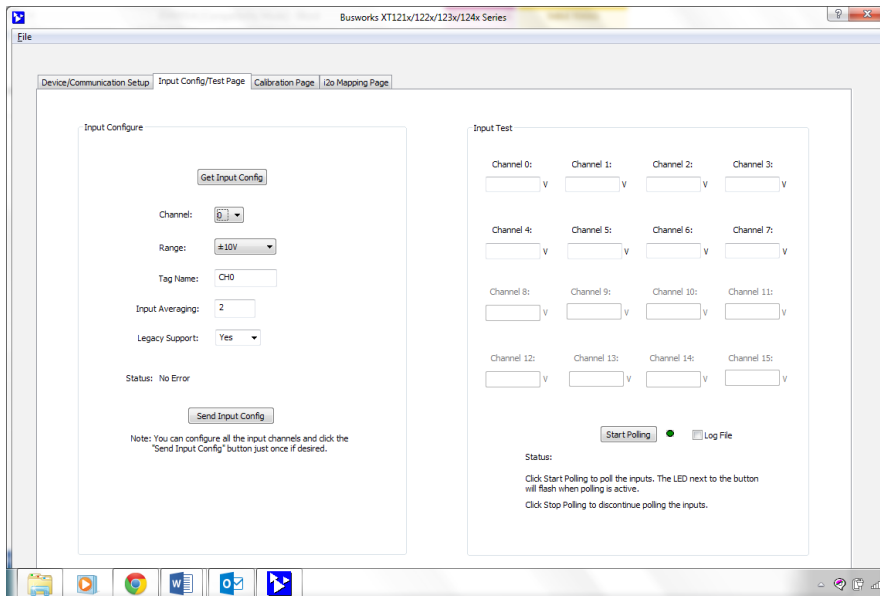
Modbus TCP/IP, Ethernet/IP, Profinet, i2o® peer-to-peer, 10/100Base-T(X) PriorityChannel™ device determinism

### Power Requirement

12 to 32V DC (2.8W)

### Key Features & Benefits

- Easy setup with Windows software via USB
- Low input impedance (27 ohms) reduces loading on current loops
- User-configurable sample averaging (1-200) on a per-channel basis
- 10ms network updates for all 16 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 approvals. ATEX Certified.



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.



# Ethernet I/O: BusWorks® XT Series

## XT1230 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  $\Sigma$ - $\Delta$  converter. 1.476uA/bit resolution

##### Noise Rejection

Better than -110dB @ 60Hz

##### Input Filter Bandwidth

-3dB at 25KHz, typical

##### Input Conversion Rate

10ms for all 16 input channels

##### Input Impedance

27.4 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 16 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.

##### MTBF: 463,547 hrs. at 25°C

345,200 hrs. at 40°C

##### Power Requirement

12 to 32V DC, 2.8W maximum  
(113mA 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. ATEX Certified.

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

☞ 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

##### [XT1231-000](#)

16-channel single-ended current input module, Modbus/TCP and i2o protocol

##### [XT1232-000](#)

16-channel single-ended current input module, Ethernet/IP protocol

##### [XT1233-000](#)

16-channel single-ended current 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

##### [XT BUS-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)

##### [5020-350](#)

AC current sensor (toroidal transformer)  
Converts 0-20A AC to 0-11.17mA DC

##### [PSSR-VD24](#)

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

