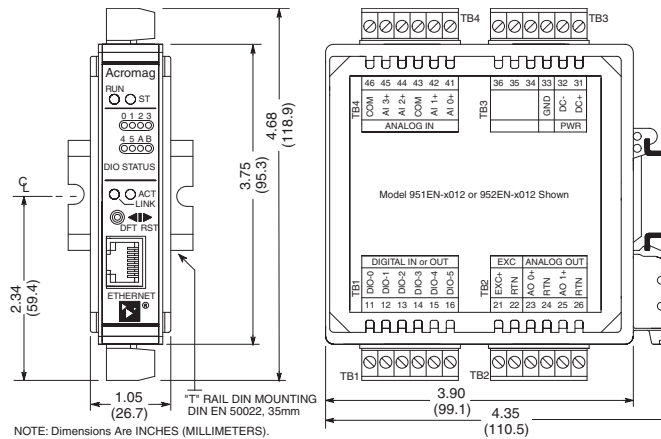


Ethernet I/O: BusWorks® Series

951EN, 952EN Ethernet Analog and Discrete I/O Modules



Standard model includes cage clamp terminal blocks.
Optional terminals are available.

EtherNet/IP™
conformance tested

Modbus/TCP
conformance tested

4 Analog Inputs, 2 Analog Outputs, 6 Discrete I/O Channels ◆ Ethernet/IP, Modbus TCP/IP, i2o® Peer-to-peer

Description

Models

951EN: Combo module, analog current inputs
952EN: Combo module, analog voltage inputs

These modules provide an isolated Ethernet network interface for analog and discrete I/O signals. Multi-range analog inputs and outputs support a wide variety of industrial devices. High-resolution, low noise, A/D and D/A converters deliver high accuracy and reliability. 3-way isolation further improves system performance. The discrete I/O provide monitoring and control of on/off, high/low, or open/close industrial devices. Tandem I/O provides output level control and status verification in one unit.

The i2o® function lets inputs on one module write directly to outputs on another module.

Analog Input Ranges

DC Current (user-selectable ranges)
0 to 1mA, 0 to 11mA, 0 to 20mA, 4 to 20mA
0 to 20 amps AC (with optional AC sensor)

DC Voltage (user-selectable ranges)
±1V, ±5V, ±10V DC

Analog Output Ranges

DC Current (user-selectable ranges)
0 to 1mA, 0 to 20mA, or 4 to 20mA
(0 to 625 ohm loads, typical)

Discrete I/O Range

0 to 35V DC active-high inputs
Current sourcing (high-side switched) outputs

Network Communication

EtherNet/IP or Modbus TCP/IP 10/100 network

Power Requirement

15 to 36V DC supply (3.3 Watts) required

Approvals

CE/ATEX marked.
UL, cUL listed, Class I; Div. 2; Groups A, B, C, D.
EtherNet/IP, Modbus/TCP conformance tested.

Key Features & Benefits

- Configurable from standard web browser
- EtherNet/IP or Modbus TCP/IP communication with automatic 10/100Mbps negotiation
- i2o technology for peer-to-peer communication without a network controller
- Multi-function, multi-channel stand-alone module is very economical
- High-resolution 16-bit Σ - Δ A/D and D/A converters ensure precise measurements
- 0-35V DC solid-state logic interface can monitor or control a wide variety of devices
- Discrete I/O channels are individually configurable as inputs or outputs in any combination
- Bi-directional discrete I/O facilitates read-back monitoring of the output state
- Built-in 5.6K ohm pull-down SIP resistors (socketed)
- Selectable failsafe modes (0%, off, last-state, or pre-defined) help prevent unsafe conditions
- Compact packaging with pluggable terminals saves space and simplifies wiring
- Wide operational temperature range permits installation in extreme environments

Acromag 
THE LEADER IN INDUSTRIAL I/O

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Ethernet I/O: BusWorks® Series

951EN, 952EN Ethernet Analog and Discrete I/O Modules



Performance Specifications

◆ Analog Input

Configuration

Four input channels. Input range is selectable as a 4-channel group.

Accuracy

Better than $\pm 0.05\%$ of span (0.1% for 0-1mA range), typical. Accuracy near or below 0mA or 0V is degraded if input COM shares AO/DIO RTNs.

Analog to Digital Converter (A/D)

16-bit Σ - Δ converter

Resolution: 0.005% or 1 part in 20000

Noise Rejection

Normal Mode: Better than 40dB @ 60Hz

Common Mode: Better than 140dB @ 60Hz

Input Conversion Rate

Less than 50mS per channel

Input Impedance

DC current input (951EN): 49.9 ohms

DC voltage input (952EN): Greater than 110.5K ohms

◆ Analog Output

Configuration

Two output channels. Individually selectable ranges.

Accuracy

Better than $\pm 0.05\%$ of span (0.1% for 0-1mA range), typical.

Digital to Analog Converter (D/A)

16-bit converter

Current Output Compliance

12V minimum, 13V typical

Current Output Load Resistance Range

0 to 625 ohms, typical

◆ Discrete Input

Input Type

Six independent, active-high, buffered inputs with a common connection. Built-in 5.6K ohm pull-down resistors socketed for 3-channel groups.

Input Signal Voltage Range

0 to 35V DC, maximum

Input Impedance

100K ohms, typical

Input Signal Threshold

TTL compatible with 100mV of hysteresis, typical.

◆ Discrete Output

Output Type

Six independent, open-source, MOSFET switches.

Output Voltage and ON Resistance

Up to 35V DC max. (0 to 330mA/ch continuous).

0.15 ohms maximum ON resistance.

◆ Environmental

Ambient Temperature and Humidity

Operating: -25 to 70°C (-13 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 or 250V AC continuous.

3-way isolation between I/O, network, and power.

Ordering Information

NOTE: i2o function only on Modbus TCP/IP modules

◆ I/O Modules

951EN-4012

Combo module, current inputs, Ethernet Modbus TCP/IP interface, i2o communication

951EN-6012

Combo module, current inputs, EtherNet/IP interface

952EN-4012

Combo module, voltage inputs, Ethernet Modbus TCP/IP interface, i2o communication

952EN-6012

Combo module, voltage inputs, EtherNet/IP interface

◆ Accessories

[Industrial Ethernet Switches](#)

[Hardware Accessories and Power Supplies](#)

[Software Support](#)

i2o™ Input-to-Output Peer-to-Peer Communication



Acromag's i2o technology allows modules to talk directly to another module across any Ethernet media without a PLC, PC, or other controller in between. Input channels on one module can write to output channels on a remote module.



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