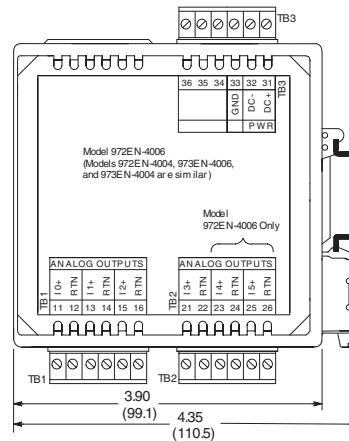
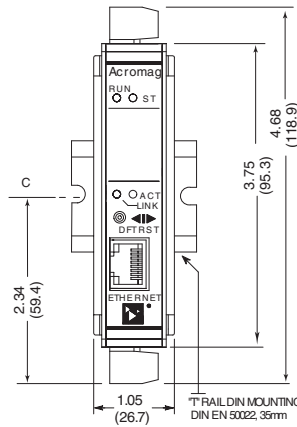


Ethernet I/O: BusWorks® Series

972EN, 973EN Ethernet Analog Output Modules



Standard model includes cage clamp terminal blocks. Optional terminals are available (see Page 26).

EtherNet/IP™
conformance tested

Modbus/TCP
conformance tested

4 or 6-channel DC current or voltage output ◆ Ethernet/IP, Modbus TCP/IP, i20 peer-to-peer messaging

Description

Models

972EN: DC current output channels
973EN: DC voltage output channels

These modules provide up to six channels of analog output. Multi-range outputs support a wide variety of industrial devices. They can drive displays and recorders, control drives, or send analog signals to other systems. High-resolution, low noise, D/A converters deliver high accuracy and reliability. 3-way isolation further improves system performance.

Output Ranges

Ranges selectable on channel to channel basis.

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

DC Voltage (user-selectable ranges)
0 to 1V, 0 to 5V, or 0 to 10V DC

Network Communication

EtherNet/IP or Modbus TCP/IP/100Mbps with automatic data rate negotiation

Power Requirement

15 to 36V DC supply required
4.6 Watts (972EN) or 2.3 Watts (973EN)

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
- 6-input stand-alone module has much lower start-up cost than multi-piece block I/O systems
- Universal DC outputs support a wide variety of signals and industrial devices
- Three selectable failsafe modes (0%, last-state, or pre-defined) help prevent unsafe conditions
- Wide operational temperature range permits installation in extreme environments

Performance Specifications

◆ Output

Accuracy
Better than $\pm 0.1\%$ of span, typical.
1.6% for 0 to 1mA range. 0.8% for 0 to 1V range.

Digital to Analog Converter (D/A)
12-bit converter.

Current Output Compliance
12V minimum, 13V typical.

Current Output Load Resistance Range
0 to 625 ohms, typical.

Voltage Output Source Current
0 to 10mA DC, maximum.

◆ Environmental

Ambient Temperature and Humidity
Operating:
972EN models -25 to 60°C (-13 to 140°F).
973EN models: -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.
Outputs share a common.

Ordering Information

NOTE: i20 function only on Modbus TCP/IP modules

◆ I/O Modules

972EN-4004
4-ch. current output, Ethernet Modbus TCP/IP, i20

972EN-4006
6-ch. current output, Ethernet Modbus TCP/IP, i20

972EN-6004
4-channel current output, EtherNet/IP

972EN-6006
6-channel current output, EtherNet/IP

973EN-4004
4-ch. voltage output, Ethernet Modbus TCP/IP, i20

973EN-4006
6-ch. voltage output, Ethernet Modbus/TCP, i20

973EN-6004
4-channel voltage output, EtherNet/IP

973EN-6006
6-channel voltage output, EtherNet/IP

◆ Accessories

Industrial Ethernet Switches
See Page 25.

Hardware Accessories and Power Supplies
See Page 26.

Software Support
See Page 27.

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