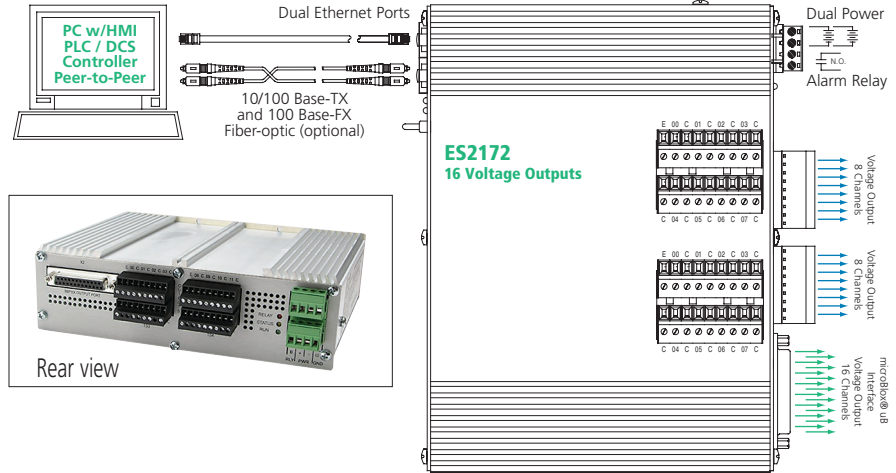


# Ethernet I/O: EtherStax® Series

## ES2172 Ethernet Analog Output Modules



16 analog voltage outputs ♦ Modbus TCP/IP, UDP/IP, i2o® peer-to-peer communication

### Description

These EtherStax I/O units provide a rugged, high-density, and high-speed solution to interface analog output signals. Each unit provides 16 high-level analog voltage outputs to control various industrial devices.

Typical applications include driving indicators, display devices, and chart recorders. The outputs can also control variable speed drives, solenoid valves, motors, positioners and other actuators. Another common use is for re-transmission of analog signals to remote SCADA, PLC, or DCS systems.

EtherStax units are built and tested for high reliability and dependable performance in hostile environments. Available in an aluminum enclosure or as an open circuit board, both formats stack vertically to maintain a very small footprint.

### Output Ranges

±5V, ±10 V DC

### Ethernet Communication

10/100Base-T(X) and 100Base-FX, Automatic MDI/MDI-X on all copper ports, Modbus TCP/IP or UDP/IP protocol i2o peer-to-peer

### Power Requirement

18 to 36V DC (redundancy-ready)

### Approvals

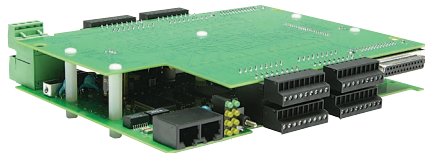
UL/cUL:  
Zone 2, Class 1, Division 2, Groups ABCD

### Key Features & Benefits

- 16-channel high-density analog output
- 3-way isolation and surge suppression
- High-resolution 16-bit D/A
- High-speed updates of less than 4 milliseconds for all channels
- Built-in loop-back circuit verifies outputs
- On-demand self-test verifies calibration
- Web browser configuration
- Peer-to-peer i2o communication output target device for Model ES215x inputs

### i2o Peer-to-Peer Messaging

With Acromag's i2o technology, you can map inputs from ES215x units to output channels on an ES2172 module. Select updates based on time or on a percent of range change (100mS or 0.1% resolution).



Open circuit board versions are also available.



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# Ethernet I/O: EtherStax® Series

## ES2172 Ethernet Analog Output Modules



### Performance Specifications

#### ◆ Analog Field Outputs

**Output Channel Configuration**  
16 single-ended DC voltage outputs.

**Output Ranges (per-channel basis)**  
±5V, ±10V DC (at ±1mA).  
User-configured on a per-channel basis.

**Output Impedance**  
1 ohm maximum.

**Output Resolution and Accuracy**  
Resolution (±10V): 16-bit maximum, 0.00166%.  
Resolution (±5V): 15-bit maximum, 0.00305%.  
Accuracy: Better than 0.05% of range.

**Output Response Time**  
1 channel: Less than 3mS, typical.  
16 channels: Less than 4mS, typical.

#### ◆ Local Alarm Output

**Configuration**  
Failsafe or non-failsafe (user-configurable) relay trips on power or link-loss failure.

**Type**  
SPST-NO, 1 Form A, Class I, Division II approved.

**Rating**  
3A @ 24V DC/250V AC, 100,000 cycles general.  
2A @ 24V DC/250V AC, Hazardous locations.

**Maximum Switching Voltage and Power**  
250V AC / 750VA, 125V DC / 90W.

#### ◆ Ethernet Interface

**Internal Switch or Hub/Repeater**  
Dual-port Ethernet switch. User-configurable as a true switch (default mode) or low-latency hub.

**Network Connector [10/100 Base-T(X) Copper]**  
One or two 8-pin RJ-45 connectors. Automatic MDI/MDI-X. 100m communication distance.

**Network Connector (100 Base-FX Fiber-optic)**  
One multi-mode with SC connector. 2km communication distance. Full/half-duplex, selectable.

**Protocols**  
Modbus TCP/IP, UDP/IP, i2o peer-to-peer

**Addressing**  
StaticIP, DHCP

**Ethernet Modbus TCP/IP Sockets/Sessions**  
1-10 socket/sessions user-configurable

**Ethernet Redundancy**  
Compatible with STP, RSTP, or any ring scheme.

i2o® Configuration Page						
Port Number	% Span Change	Update Time(100mS)	Map To IP Address	Map To Holding Register	Mapping Method	Map To Internal Outputs
Port 1 Voltage	0.0 0.0	150 0	128.1.1.102 0.0.0.0	40351 0	<input type="radio"/> Unipolar to Unipolar <input type="radio"/> Bipolar to Unipolar <input type="radio"/> Bipolar to Bipolar <input type="radio"/> Unipolar to Bipolar	<input type="radio"/> NO <input type="radio"/> YES
Port 2 Voltage	0.0 0.0	0 0	0.0.0.0 0.0.0.0	0 0	<input type="radio"/> Unipolar to Unipolar <input type="radio"/> Bipolar to Unipolar <input type="radio"/> Bipolar to Bipolar <input type="radio"/> Unipolar to Bipolar	<input type="radio"/> NO <input type="radio"/> YES
Port 1 Current	0.0 0.0	0 0	0.0.0.0 0.0.0.0	0 0	<input type="radio"/> Unipolar to Unipolar <input type="radio"/> Bipolar to Unipolar <input type="radio"/> Bipolar to Bipolar <input type="radio"/> Unipolar to Bipolar	
Port 2 Current	0.0 0.0	0 0	0.0.0.0 0.0.0.0	0 0	<input type="radio"/> Unipolar to Unipolar <input type="radio"/> Bipolar to Unipolar <input type="radio"/> Bipolar to Bipolar <input type="radio"/> Unipolar to Bipolar	

Example i2o peer-to-peer mapping configuration screen from input source module (ES215x model).

#### ◆ i2o Peer-to-Peer Communication

Each port of 8 output channels can serve as a target for mapped inputs from ES215x units. Updates are based on time (100mS resolution) or percent of range change (0.1% resolution).

#### ◆ Environmental

**Operating and Storage Temperature**  
Operating: -40 to 70°C (-40 to 158°F)  
Storage: -40 to 85°C (-40 to 185°F)

**Power Requirements**  
18-36V DC. Redundant, diode-coupled terminals.  
3.3W (copper ports), 4.6W (fiber-optic ports), not including excitation power.

**Isolation**  
I/O, power, relay and Ethernet port-to-port.  
Peak: 1500V AC, ANSI/ISA-82.01-1988  
Continuous: 250V AC, 354V DC (150V AC ch-ch)

#### ◆ Enclosure and Physical

**Housing Classification and Dimensions**  
IP20: 8.226 x 2.444 x 7.25", 4 lbs. packed  
PCB: 7.920 x 1.875 x 7.25", 1.65 lbs. packed

**Safety Approvals**  
UL/cUL Listed.

Hazardous Locations: Class I; Div 2; A, B, C, D  
Open board units: UL Recognized

**Shock and Vibration Immunity (in enclosure)**  
Mechanical Shock: 50g (3ms), 30g (11ms)  
Random Vibration: 5g, (5-500Hz)

### Ordering Information

#### ◆ Models

[Go to on-line ordering page >](#)

**ES2172-0000**  
Voltage outputs, two Cu ports, IP20 enclosure

**ES2172-0010**  
Voltage outputs, two Cu ports, open board (no IP20 enclosure)

**ES2172-1000**  
Voltage outputs, Cu & fiber ports, IP20 enclosure

**ES2172-1010**  
Voltage outputs, Cu & fiber ports, open board (no IP20 enclosure)

#### ◆ Accessories

Industrial Ethernet Switches

Hardware Accessories and Power Supplies

Software Support

