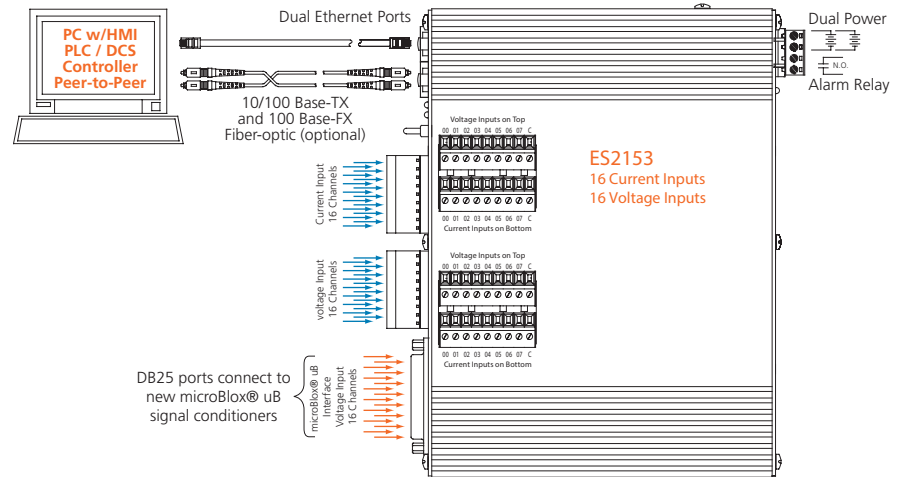


Ethernet I/O: EtherStax® Series

ES2153 Ethernet Analog Input Modules



32 analog inputs (16 current + 16 voltages) ♦ 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 a large quantity of analog input signals. Units accept 16 single-ended analog voltage inputs and 16 single-ended current inputs. A DB25 port supports an alternate interface of voltage inputs from microBlox® uB signal conditioning modules. This combination of high-density analog current and voltage inputs is ideal for many sensor interface applications in remote zones.

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.



Interface to microBlox® uB signal conditioning modules.

Input Ranges

±5V, ±10V, ±20mA, 0-20mA, 4-20mA DC

Ethernet Communication

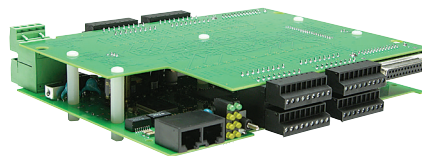
10/100Base-T(X) and 100Base-FX, Automatic MDI/MDI-X on all copper ports, Modbus TCP/IP or UDP/IP protocol i2o peer-to-peer

Power Requirement

18 to 36V DC (redundancy-ready)

Approvals

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



Open circuit board versions are also available.



Select from more than 100 microBlox® uB input modules.

Key Features & Benefits

- 32-channel high-density combination of analog current and voltage inputs
- DB25 ports for alternate voltage I/O from microBlox® uB signal conditioning backpanels
- 3-way isolation and surge suppression
- High-resolution 16-bit A/Ds
- High-speed scanning for 10 millisecond update of all 32 channels
- Automatic zero/span calibration
- On-demand self-test verifies calibration
- Web browser configuration
- User-configurable sample averaging and integration/totalization function with non-volatile registers
- Dual-format data registers support 16-bit integers or 32-bit floating point
- Scaling registers on all channels
- Peer-to-peer i2o communication with percent-of-span and timed updates

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Performance Specifications

◆ General Specifications

See Page 7 for communication and other specs.

◆ Analog Field Inputs

Input Channel Configuration

16 single-ended analog voltage inputs and
16 single-ended analog current inputs.

Input Ranges (select on per-channel basis)

±5V, ±10V, ±20mA, 0-20mA, or 4-20mA DC.

Input Scaling (per-channel basis)

Floating Point Format: IEEE-754

Input Resolution

16-bit maximum, 0.00166% (1 part in 60,000)

Input Accuracy

Current Input: Better than 0.1% of range

Voltage Input: Better than 0.05% of range

Input Impedance

Voltage: 4M ohms minimum

Current: 100 ohms

Input Scan Groups and Scan Times

Eight user-enabled 4-channel scan groups. 770µS
update/group (5mS for all 32 channels) with averaging,
loopback, and totalization functions disabled.

Input Overvoltage Protection

Bipolar Transient Voltage Suppressors (TVS),
18V clamp level typical.

Noise Rejection

CMR (50-60Hz): Better than -72dB

Sample Averaging (user-configurable)

0-500 samples. One register for all channels

◆ 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 communica-
tion distance. Full/half-duplex, selectable.

Protocols

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

Addressing

StaticIP, DHCP, BootP

Ethernet Modbus TCP/IP Sockets/Sessions

1-10 socket/sessions user-configurable.

Ethernet Redundancy

Compatible with STP, RSTP, or any ring scheme.

◆ i2o Peer-to-Peer Communication

Each port of 8 input channels can be mapped to out-
put ports of two ES215x units. Updates 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.

4.8W (copper ports), 5.8W (fiber-optic ports).

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

◆ EtherStax I/O Units

[ES2153-0000](#)

Current/voltage inputs, two Cu ports,
IP20 enclosure

[ES2153-0010](#)

Current/voltage inputs, two Cu ports,
open board (no IP20 enclosure)

[ES2153-1000](#)

Current/voltage inputs, Cu & fiber ports,
IP20 enclosure

[ES2153-1010](#)

Current/voltage inputs, Cu & fiber ports,
open board (no IP20 enclosure)

◆ Accessories

[microBlox® uB Modules and Backpanels](#)

See Page 32.

[Industrial Ethernet Switches](#)

See Page 33.

[Hardware Accessories and Power Supplies](#)

See Page 34.

[Software Support](#)

See Page 36.