Up to 1MHz, Multifunction, 16-Bit Analog I/O Ethernet Module Datasheet

Features and Options — eNET-AIO16-16F Family

FEATURES

- Ethernet 10/100/1000 Multifunction DAQ
- Sustained sampling speeds up to 1MHz
- 16-bit or 12-bit resolution A/D converter
- Flexible, software configured functionality
- 16 single-ended or 8 differential analog inputs
- 8 input ranges, 4 unipolar and 4 bipolar, channel-by-channel programmable
- Autocalibration and filtering onboard for accurate data
- Four 16-bit analog outputs with 5 programmable ranges
- 16 high-current digital I/O lines
- TCP packet interface with Windows DLL API wrapper
- Small, (4″x4″x1.7″) rugged, steel industrial enclosure
- Designed, made, supported, and manufactured in the USA

FACTORY OPTIONS:

- Industrial operating temperature (-40°C to +80°C)
- OEM version (board only), features PC/104 size and mounting compatibility
- DIN rail mounting provision
- RoHS available, please contact us for ordering information

Functional Description

The ENET-AIO16-16F is an ideal solution for adding portable, easy-to-install high-speed analog and digital I/O capabilities to any computer with a USB port. The board is plug-and-play allowing a quick connection whenever you need additional I/O on the convenience of a USB port. Also, the unit is a high-speed USB 2.0 device, offering the highest speed available on the USB 2.0 bus.

The ENET-AIO16-16F is a 16-bit resolution A/D board capable of sampling speeds up to 1MHz for its 16 single-ended or 8 differential analog inputs. Each channel can be independently software configured to accept 8 different input ranges. A unique, real-time internal calibration system allows the card to continually compensate for offset/gain errors giving a more accurate reading. Additional features include 16 digital I/O lines and 4 (optional) analog outputs.

This small, compact, multifunction I/O board provides the user with everything needed to start acquiring, measuring, analyzing, and monitoring in a variety of applications. The ENET-AIO16-16F data acquisition board can be used in many current real-world applications such as embedded equipment monitoring, precision PC-based and portable environmental measurements, and mobile data acquisition. The board is designed to be used in rugged industrial environments but is small enough to fit nicely onto any desk or testing station. The board is PC/104 sized (3.550 by 3.775 inches) and ships inside a steel powder-coated enclosure with an anti-skid bottom.

OEM ETH/104 FORM FACTOR

The OEM (board only) version is perfect for a variety of embedded applications. What makes the OEM option unique is that its PCB size and mounting holes match the PC/104 form factor (without the bus connections). The board can be added to any PC/104 type stack by connecting it to an available 10/100 base T port typically available on embedded CPU form factors such as EPIC, and PC/104. It can also be installed using standoffs inside other enclosures or systems.

SOFTWARE

Because of Ethernet's ubiquitous nature these boards are supported for use in all operating systems -- including Windows, Linux, Unix, iOS, Android, -- even Raspberry PI, etc. The software package includes free Linux and Windows software with sample programs and source code in C# and Delphi for Windows. Also provided is a graphical setup program in Windows and extensive Ethernet-packet level API documentation. Third party application support includes a Windows standard DLL API usable from most popular application programs. Embedded OS support includes Windows Embedded Standard, and all applications, operating systems, and PLCs and all other devices capable of TCP/IP communication.

Special Order

Please contact ACCES with your precise requirement. Examples of special orders are conformal coating, custom software or product labeling, and more. We will work with you to provide exactly what is required.

Optional Accessories

The eNET-AIO16-16F Family of products is available with optional cable assemblies, screw terminal boards, and a DIN rail mounting provision.

Isolated Digital Input & Solid State FET Output Ethernet Module Datasheet

Specifications

PC Interface

RJ45 Ethernet	10/100/1000 Base-T

Analog Inputs

ADC Type	Successive approximation
Resolution	16-bit differential bipolar ADC
Sampling rate	1 Msps aggregate
Number of channels	16 Single-Ended or 8 Differential inputs software control)
Ranges	0-1V, 0-2V, 0-5V, 0-10V, ±1V, ±2V, ±5V, ±10V (software selectable)
Int Nonlinearity Error	0.0011% FS
No Missing Codes	16 bits
Input Impedance	1MΩ
A/D Start Sources	Software Start, Timer Start, External Start, Externally Triggered Timer Start
A/D Start Types	Single Channel or Scan
Overvoltage Protection	-40 to +40V
Crosstalk	-53dB @ 1MHz -84dB @ 500kHz

Analog Outputs

Number	4
Type:	Single-ended
Resolution:	16-bit
Bipolar Ranges:	±2.5V, ±5V, ±10V
Unipolar Ranges:	0-5V, 0-10V
Settling Time	20us typical, +/-10V (+/-1LSB at 16 bits)
Output Current	max ±10mA per channel

Environmental

Temperature	Operating	0°C to +70°C -40°C to +85°C (-T option)
	Storage	-40°C to +105°C
Humidity		5% to 95% RH, non-condensing
Dimensions	PC/104 format, 3.550" by 3.775" w/mounting holes	

Digital Input / Output Interface

Digital Bits		16, individually direction controllable
Digital Inputs	Logic High Logic Low	2.0V to VCCIO (3.3VDC, 5VDC tolerant) 0V to 0.8V
Digital Outputs	Logic High Logic Low	2.0V (min) 24mA source 0.55V (max) 24mA sink

Power

Power required, PoE	
Power required, External	+3.3VDC @ 225mA (idle) 320mA (full load) +1.5VDC @ 280mA (idle) 295mA (full load)

I/O Interface Connectors

On card	Molex 501190-4017 40-pin latching
Mating	Molex 501189-4010
On-cable	Male, D-Sub Miniature, 37-pin
Mating	Female, D-Sub Miniature, 37-pin

Model Options

-T	Extended Temperature Operation (-40° to +85°C)
-I	4-20mA inputs
-Sxx	Special configurations (10-50mA inputs, input voltage dividers, conformal coating, etc.)

Ordering Guide

eNET-AIO16-16F	A/D 16-bit, 16-ch, 1MHZ, 4 D/A
eNET-AIO16-16A	A/D 16-bit, 16-ch, 500KHZ, 4 D/A
eNET-AIO16-16E	A/D 16-bit, 16-ch, 250KHz, 4 D/A
eNET-AI16-16F	A/D 16-bit, 16-ch, 2MHZ
eNET-AI16-16A	A/D 16-bit, 16-ch, 500KHZ
eNET-AI16-16E	A/D 16-bit, 16-ch, 250KHz
eNET-AIO12-16A	A/D 12-bit, 16-ch, 500KHZ, 4 D/A
eNET-AIO12-16	A/D 12-bit, 16-ch, 250KHz, 4 D/A
eNET-AIO12-16E	A/D 12-bit, 16-ch, 100KHz, 4 D/A
eNET-AI12-16A	A/D 12-bit, 16-ch, 500KHZ
eNET-AI12-16	A/D 12-bit, 16-ch, 250KHz
eNET-AI12-16E	A/D 12-bit, 16-ch, 100KHz