MCM-210 Series

Standalone Ethernet DAQ with 8/16-ch AI, 16-bit, 250kS/s, 4-ch DI/O

Features

- Standalone Ethernet DAQ enabling edge computing
- RESTful API for periodic machine condition polling
- Built-in web console for easy configuration and use as a remote DAQ
- Two 1Gb Ethernet ports for cascading
- 16-ch 250KS/s voltage input (MCM-216)
- 8-ch 250KS/s current input (MCM-218)
- Supports custom algorithms to filter data at the edge
- Supports USB Wi-Fi dongle for wireless data transmission
- Supports TCP socket (client mode) to transmit data actively



Introduction

ADLINK's MCM-216/218 ultra-compact edge DAQ based on ARM Cortex-A9 processors and featuring built-in 16 or 8 channel, 16-bit, analog voltage or current input, can function as a standalone edge device without a host PC and is ideally suited for 24-hour sensor measurement and condition monitoring IIoT applications. Through Gb Ethernet communication, data can be quickly transmitted to the central site. Dual Ethernet ports enable daisy-chain connections that reduce the cost of network equipment and extend the communication distance.

Distributed Data Acquisition at the Edge

In order to provide constant remote data acquisition and condition monitoring, a DAQ system composed of an embedded system plus a DAQ card can deployed at each remote machine site. However, when remote machines are numerous and spread out geographically, the deployment of DAQ systems at each site becomes prohibitive. The MCM-216/218 is a standalone Ethernet DAQ system that is designed specifically to perform the tasks of a DAQ system without requiring the complexity and added cost of an embedded system.

Data Filtering at the Edge

The signals acquired by sensors are raw data that must be filtered and converted into usable data such as FFT, voltage, g-type array, or OA values. The MCM-216/28 standalone DAQ system can be deployed at each field site and perform the task of filtering raw data traditionally done by an embedded system. By converting and transmitting filtered, size-reduced data from the edge to the central site, network load and processing demands on backend servers are reduced dramatically.

Customized Filtering Algorithms

The MCM-216/218 offers flexible support options for custom filtering algorithms written in C/C++ and compiled under Linux. These valuable and confidential algorithms can be imported through a web console. The MCM-216/218 thus enables the migration of user-defined filtering algorithms to the edge in a cost-effective manner.

Built-in Web Console

The MCM-216/218's built-in web console allows configuration via web browser to make it easy to get started with remote data acquisition operation and eliminate the need for application specific programming. Settings for relevant parameters and data types are presented in an intuitive dashboard format. The MCM-216 makes it quick and easy to set up remote data acquisition operation.

Software Development Kit

ADLINK provides RESTful API to assist users with integrating the MCM-216/218 into their system.

- **RESTful API in C#, Python, and JavaScript**

Ordering Information

- **MCM-216**
  Standalone Ethernet DAQ with 16-ch Voltage input, 16-bit, 256kS/s, 4-ch DI/O
- **MCM-218**
  Standalone Ethernet DAQ with 8-ch Current input, 16-bit, 256kS/s, 4-ch DI/O

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Specifications

Model Name	MCM-216	MCM-218
System Specifications		
Ethernet (1Gb)	2x RJ45 Ethernet ports (1 IP, Ethernet cascade supported)	
MCU	ARM Cortex A9 1.0GHz	
NAND Flash (eMMC)	4GB	
Memory	DDR3 RAM 1GB	
USB	2x USB 2.0 (for Wi-Fi dongle and USB storage only)	
Power Supply	9 to 30 VDC power input	
Power Consumption	Max. 8.8W	
Isolation	1.5kV	
Communication Interfaces	Web Console / RESTful API / Streaming SDK / TCP Socket (client mode)	
Digital Temperature Sensor	-50°C to 150°C (with 3 meter cable)	
Analog Input		
Resolution	16-bit	
Number of Channels	16 SE / 8 pseudo-diff, voltage input	8 current inputs
Maximum Sampling Rate	250 kS/s (multiplexing)	
Input Range	±10V, ±2.5V, ±1.25V, ±312.5mV	0-20 mA
Offset Error	± 0.1 mV (± 10V)	±0.01 mA (typical)
Gain Error	± 0.05% of FSR (± 10V)	±0.05% of FSR (typical)
Analog Output		
Resolution	16-bit	
Number of Channels	2 voltage or current outputs	
Maximum Update Rate	100 KS/s	
Output Range	± 10 V or 0-20 mA	
Digital I/O		
Number of I/O	4 DI and 4 DO	
Digital Type	TTL input: 0-5V for DI / open drain for DO	
Input Logic Level	Logic low: VIL = 0.8 V max. / IIL = 0.2 mA max. / Logic high: VIH = 2.0 V min. / IIH = 0.2 mA max.	
Overvoltage Protection	± 50V	
Mechanical		
Dimensions	110.5 (L) x 40 (W) x 126.5 (H) mm	
Connectors	2x 14-pin + 2x 6-pin spring-type terminal block	
Front Panel LEDs	4	
Housing	Metal, IP30	
Mounting	DIN rail kit (wall mount kit optional)	
Environmental		
Operating Temperature	0°C to 50°C (32˚F to 122˚F)	
Storage Temperature	-20°C to 70°C (-4˚F to 158˚F)	
Humidity	approx. 95% @ 40°C (non-condensing)	
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes	
Shock	Operating: 100 G, half sine 11 ms duration	
EMC	EN61000-6-4/EN61000-6-2	
EMI	FCC Part 15B Class A, CISPR 32	
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1.0 GHz, 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal 2 kV IEC 61000-4-5 Surge: Power 0.5 kV; Signal 1 kV IEC 61000-4-6 CS: 0.15 MHz to 80 MHz, 10 V IEC 61000-4-8 PFMF	
Safety	IEC 61010-1	

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