MCM-100

Intel Atom® x7-E3950 Processor-Based Machine Condition Monitoring Edge Platform

Features

- Easy to set up, ready-to-go rotary machine vibration/condition monitoring edge platform
- Built-in 4CH, 24-bit simultaneous sampling analog inputs, up to 128kS/s
- Supports IEPE 2mA excitation current output on each analog input to drive accelerometer
- Equipped with Intel Atom® x7-E3950 processors (Quad core)
- Extremely compact with versatile I/O support
- Optional Phoenix GM Lite machine condition monitoring software
- Optional PCB 603C01 vibration sensor accelerometer
- Optional Wi-Fi/ 4G LTE wireless kit

Introduction

ADLINK's new MCM-100 ultra-compact machine condition monitoring edge platform, based on Intel Atom® x7-E3950 processors and built-in four-channel, 24-bit high-resolution analog input, is ideally suited for data acquisition and vibration measurement applications, delivering 24-hour vibration monitoring for rotating machinery and equipment. A full aluminum alloy enclosure with industry-class construction makes the MCM-100 the embedded system of choice for condition monitoring applications demanding reliability in harsh environments. With dual GbE LAN, two COM, two USB 2.0 and two USB 3.0 host ports, and dual Mini PCIe slots and USIM socket support communication with connections via Wi-Fi and 4G LTE, the MCM-100 provides seamless interconnection, ensuring interoperability between systems.

With the optional Phoenix GM Lite vibration monitoring software (built-in ISO 10816 vibration severity standards), and simply installed magnetic mounted accelerometer and cable, the MCM-100 allowing users trouble-free access to vibration monitoring on any rotary device. With automatic event alarm notices effectively achieving intelligent predictive maintenance, the MCM-100 significantly reduces loss from unexpected anomalies in rotating equipment applications.

Software Support

- Windows® 10 IoT Enterprise/ Windows® 10 IoT Core
- Ubuntu Linux

Driver and SDK
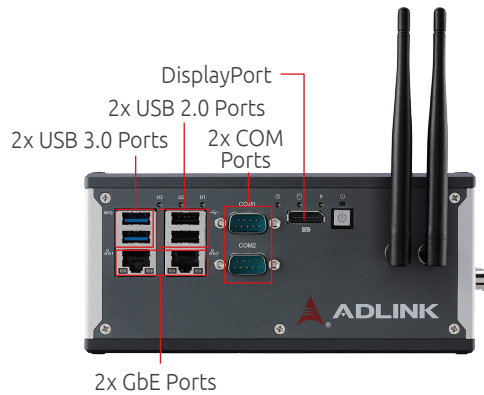
- LabVIEW, MATLAB, C/C++, Visual Basic, Visual Studio. NET

Ordering Information

- **MCM-100**
  MCM-100 Intel Atom® E3950 Processor-Based Machine Condition Monitoring Edge Platform with built-in 4-ch 24-bit DSA, 4GB RAM, 128G mSATA SSD

Optional Accessories

- **ICP Accelerometer IMI_603C01**
  ICP Accelerometer IMI_603C01, 100mV/g, 0.5 to 10kHz, 2-pinn conn. w/ 10-ft cable and magnetic mount
- **GM Lite License Key**
  Software License key for Phoenix GM Lite
- **WIFI/BT KIT**
  FANGTEC WIFI/BT KIT(EA) WLAN 802.11ac 2T2R+BT4.0 Half Mini Card
- **AC-DC ADAPTER 40W**
  MEANWELL,GST40A24-AD, Input: 90~264Vac/40W Output: 24Vdc/1.67A

Product Illustration

Front view of MCM-100

DisplayPort
2x USB 2.0 Ports
2x USB 3.0 Ports   2x COM Ports
2x GbE Ports

Specifications

Model Name	MCM-100
System Specification	
Processor	Intel Atom® x7-E3950 processor
Video	1x DisplayPort
Memory	DDR3L 1066 SODIMM 2 GB
Storage	Factory installed 128 GB mSATA SSD
Ethernet	2x GbE LAN (Intel® I210-IT)
Serial Port	2x COM (2 x RS-232/422/485)
USB	2x USB 2.0 + 2x USB 3.0
Mini PCIe	2x Mini PCIe card slots
Wireless Kit (option)	Wi-Fi/4G LTE wireless Kit
Power Supply	6 ~ 36 VDC, Optional 40W AC/DC adapter
Vibration Measurement I/O Specification	
Channels	4CH
Resolution	24-Bit
Max. Sampling Rate	128 kS/s
Input Range	±10V
Input Mode	Diff/P-Diff
Input Coupling	AC/DC
IEPE Excitation Current	0 or 2mA (IEPE compliance: 24V)
Over-Voltage Protection	±60V
DC accuracy - Offset Error	Typical: ±0.15mV, Max. ±0.3mV
DC accuracy - Gain Error	Typical: ±0.15%, Max. ±0.3%
System Noise	50 µVrms
-3dB Bandwidth	0.49 * sampling rate
AC Cutoff	0.4Hz (-3dB), 2.4Hz (-0.1dB)
Flatness	±0.01 dB (20 Hz to 1 kHz)
CMRR	60 dB (20 Hz to 1 kHz)
Crosstalk	-100 dB
Dynamic Range	100 dB
SFDR	104 dB
THD	-94 dB
THD+N	-91 dB
Trigger Source	Analog or digital, software selectable
Trigger Mode	Post, delay, middle, pre-trigger, re-trigger
Auto-Calibration	Yes
DIO	2 programmable function I/O
Mechanical	
Dimensions	183 (W) x 110 (D) x 83.85 (H) mm
Construction	Full Aluminum Alloy
Mounting	DIN-rail/wall mountable
Environmental	
Operating Temperature	0 to 55°C (32 to 131°F)
Storage Temperature	-20 to 70°C (-4 to 158°F)
Humidity	approx. 95% @ 40°C (non-condensing)
Vibration	Operating 5 Grms, 5-500 Hz, 3 axes w/ mSATA SSD
ESD	Contact +/-4 KV, Air +/-8 KV
Shock	Operating 100 G, half sine 11 ms duration w/ mSATA SSD
EMC	CE & FCC Class B (EN61000-6-4/EN61000-6-2)

Phoenix GM Lite Rotary Machine Condition Monitoring Application

- 4CH simultaneous sampling at pre-defined intervals (min. 60 seconds)
- Automatic OA (overall) calculation of displacement, velocity, and acceleration
- Real-time display of acceleration waveform and FFT
- Threshold settings for conditions user-defined or by default with ISO 10816
- Machinery vibration standards
- Trend display and report generation
- Efficient raw data storage:
  Below alarm level: recording OA only
  Exceeding alarm level: recording raw data for further analysis

Calculates different overall (OA) bandwidth and condition data, generating alerts when pre-defined alarm and condition parameters are exceeded.

The red, yellow, and green icons are easy to read and recognize the abnormal state according to the customized alert range

Real-time display of acceleration waveform and FFT

Threshold settings for conditions user-defined or by default with ISO 10816 machinery vibration standards

ADLINK Leading EDGE COMPUTING