MIC-1816R

16-Bit, 1MS/s, DAQ Platform with ARM Cortex™-A9 i.MX6 1GHz

Introduction

MIC-1816R is a RISC (ARM) based stand-alone automation controller integrates with data acquisition and signal conditioning to provide IEPE input, analog I/O, isolated digital I/O, and counter functions. This application ready controller also supports serial communication ports and several other networking interfaces to seamlessly enable integration and rapid system development.

Specifications

Analog Input
- Channels: 4-ch IEPE and 8-ch general AI (Voltage/Current)
- Resolution: 16 bits
- Sample Rate: Single channel: 5 MS/s max.; Multiple channels: 1 MS/s max.

Note: The sampling rate of each channel is influenced by the number of used channels. For example, if 4 channels are used, the sampling rate will be 1MS/4 = 250 Ks/s per channel.
- Trigger Reference: Analog triggers
- Trigger Mode: Start, Delayed Start Stop, Delayed Stop
- FIFO Size: 4,000 samples
- Overvoltage Protection: Voltage: 1 GΩ Current: 500 Ω
- Input Impedance: Voltage: 1 GΩ Current: 500 Ω
- Sampling Modes: Software and external clock
- Input Range: Software programmable

Gain 0.5 1 2 4 8
Gain Error (%FSR) 0.0075 0.0075 0.0075 0.008 0.008

Current Input Range: 4-20mA (according to voltage range 0~10 V)
- Current Input Update Rate: 20 KS/s
- Current Input -3dB frequency: 15 Hz
- Analog Trigger Reference: -10 ~ +10 V
- Analog Trigger Resolution: 16 bits (0.3 mV/step)

Integrated Electronic Piezoelectric (IEPE) Excitation
- Preamplifier Gain: 1, 10, 100 switch selectable
- AC Couple Upper Cut-Off Frequency: Gain x1, x10(-5%): 100kHz Gain x100(-1%): 50kHz
- AC Couple Lower Cut-Off Frequency (-3dB, 1MΩ): 0.58Hz
- Accuracy: < ±2% for all gain settings
- Compliance: > 24 V
- Current: 4 mA
- Discharge Time Constant: > 0.3 seconds
- DC Offset: < 30 mA

Analog Output
- Channels: 2-ch Voltage / Current-sink / Current-source (shared)
- Resolution: 16 bits
- Sample Rate: 3 MS/s max.
- Output Range: Software programmable
- Voltage Output Range: 0V~5V, 0V~10V, ±5V, ±10V
- Current Output Range: 4-20mA (according to voltage range 0~10 V)
- Current Mode Update Rate: 20 KS/s
- Current Mode Accuracy: Source: ±0.15% FSR Sink: ±0.05% FSR
- Current Mode Loading: Source: max. 600 Ω Sink: depends on external voltage
- Current Sink Voltage: Sink: max. 50 VDC

Isolated Digital Input
- Channel: 8
- Isolation Protection: 2,500 VDC
- Interrupt Capable Channel: 1
- Digital Filter Channel: 1
- Opto-Isolator Response: 100 µs
- Input Voltage: Logic 0: 2V max. Logic 1: 5 ~ 50 V

Isolated Digital Output
- Channels: 8 (NPN)
- Isolation Protection: 2,500 VDC
- Output Voltage: 5 ~ 40 VDC
- Sink Current: 500 mA max./channel
- Opto-Isolator Response: 100 µs

Counter
- Channels: 2
- Resolution: 32 bits
- Compatibility: 5 V/TTL
- Isolation Protection: 2,500 VDC
- Opto-Isolator Response: 100 µs

RoHS COMPLIANT
2002/95/EC

All product specifications are subject to change without notice. Last updated: 8-Oct-2019
Block Diagram

General
- **Dimensions (W x H x D)**: 165 x 65 x 130 mm (6.49” x 2.56” x 5.11”)
- **Power Consumption**: 15W
- **Power Requirements**: Single 12Vdc power input
- **Weight**: 2.4 kg (typical)
- **OS Support**: Linux Ubuntu, Yotco

RISC System Hardware
- **CPU**: NXP ARM® Cortex™-A9 i.MX6 Quad 4 x processor
- **Memory**: Onboard DDR3 2GB
- **Flash**: 4 GB eMMC NAND Flash for O.S (Yotco only)
- **Ethernet**: 1 x 10/100/1000 Mbps
- **USB**: 1 x USB 2.0, 1 x USB 2.0 OTG
- **Serial Port**: 2 x RS-232
- **CAN Port**: 2 x 1 Mbps
- **Storage**: 1 x SATA 2.5” SSD, 1 x SD slot

Environment
- **Storage Humidity**: 5 – 95% RH, non-condensing
- **Operating Temperature**: 0 – 50°C (32 – 122°F) @ 5 – 85% RH with 0.7m/s air flow
- **Storage Temperature**: -20 – 80°C (-4 – 176 °F)
- **Indicators**: LEDs for Power, IDE and LAN (Active, Status)

Ordering Information
- **MIC-1816R-AE**: 16-Bit, 1MS/s, DAQ Platform with ARM Cortex™-A9 i.MX6 1GHz

Optional Accessories
- **1700001714**: Power cord (BSMI) 3P, 7A, 125V, 18AWG, 180 cm
- **1702002600**: Power cord UL/CSA (USA) 3P, 10A, 125V, 1.83 m, 180 D
- **1700023535-01**: Power cord (CCC) 3P, 16A, 250V, 183 cm
- **1960077844N001**: Table mount (130 x 175 mm)