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ECU-1710A

Intel® Atom™ D510 Controller with 16-ch AI, 4-ch AO and 32-ch Isolated DI/O

Features

- Onboard Intel Atom D510 1.66 GHz processor
- 2 x RS-232 ports
- 2 x 10/100Base-T RJ-45 ports
- 2 x USB ports
- Integrated PCI-1710UL & PCI-1720U modules
- 16-ch single-ended or 8-ch differential or a combination of Analog Input
- 12-bit A/D converter, with up to 100kS/s sampling rate
- 4-ch 12-bit Analog Output
- 16-ch Isolated Digital Input/Digital Output
- 1-ch Isolated Counter

Introduction

The ECU-1710A is a standalone automation controller with integrated PCI-1710UL and PCI-1720U to provide 16-ch Analog Input, 4-ch Analog Output, 16-ch Isolated Digital Input and 16-ch Isolated Digital Output. This controller also supports serial communication ports and several other networking interfaces. You can seamlessly integrate your applications into the ECU-1710A and speed up your system development with these application ready controllers.

Specifications

General

- **Dimensions (W x D x H)** 255 x 152 x 59 mm (10" x 6.0" x 2.3")
- **Power Consumption** 28 W (Typical)
- **Power Requirements** 18 ~ 30 V_{DC} (e.g 24 V @ 2 A) (Min. 48 W), AT
- **Weight** 2.4 kg (Typical)
- **OS Support** WES 2009

System Hardware

- **CPU** Intel Atom D510 1.66 GHz/ 512 KB L2 Cache
- **Memory** 1GB DDRII 667MHZ
- **Indicators** LEDs for Power, IDE and LAN (Active, Status)
- **Keyboard/Mouse** 1 x PS/2
- **Storage** 1 x internal typeI/II CompactFlash® slot,
  1 x Built-in 2.5" SATA HDD bracket

I/O Interface

- **Serial Ports** 2 x RS-232
- **LAN** 2 x 10/100Base-T RJ-45 ports
- **USB Ports** 2 x USB, EHCI, Rev. 2.0 compliant

Analog Input

- **Channels** 16 single-ended/ 8 differential
- **Resolution** 12 bits
- **Max. Sampling Rate** 100 kS/s
- **FIFO Size** 4,096 samples
- **Overvoltage Protection** 30 Vp-p
- **Input Impedance** >18M ohm
- **Sampling Mode** Delay to Start, Delay to Stop,None
- **Input Range** (V)

Unipolar	N/A	0 ~ 10	0 ~ 5	0 ~ 2.5	0 ~ 1.25
Bipolar	±10	±5	±2.5	±1.25	±0.625
Accuracy (% of FSR ±1LSB)	0.1	0.1	0.2	0.2	0.4

Analog Output

- **Channels** 4
- **Resolution** 12 bits
- **Output Range** (Software programmable)
  Unipolar (V) 0 ~ 5, 0 ~ 10
  Bipolar (V) ±5, ±10
  Current Loop (mA) 0 ~ 20, 4 ~ 20
- **Driving Capability** 5 mA
- **Accuracy** Relative: ±1 LSB; Differential Non-Linearity: ±1 LSB (monotonic)
- **Excitation Voltage** 48 V (max.)

Digital Input /Output / Counter

- **DI Channels** 16
- **DI Input Voltage** Logic 0: 2 V max.
  Logic 1: 5 V min. (30 V max.)
- **DO Channels** 16
- **DO Output Type** Sink Type (NPN)
- **DO Output Voltage** 5 ~ 40 V_{DC}
- **DO Sink Current** 300 mA max. per channel
- **Counter Channels** 1
- **Counter Resolution** 16 bits
- **Counter Input Voltage** Logic 0: 2 V max.
  Logic 1: 5 V min. (30 V max.)
- **Counter Max. Input Frequency** 1 MHz
- **Isolation Protection** 1,000 V_{DC}

Environment

- **Storage Humidity** 5 ~ 95% RH, non-condensing (IEC-60068-2-3)
- **Operating Temperature** -10 ~ 60°C (14 ~140°F) @ 5 ~ 85% RH
- **Storage Temperature** -20 ~ 80°C (-4 ~176°F)

Ordering Information

- **ECU-1710A-A32E** Intel Atom D510 1.66 GHz controller with AI/O and DI/O

Accessories

- **ADAM-3925-AE** DB25 DIN-rail Wiring Board
- **ADAM-3937-BE** DB37 DIN-rail Wiring Board

ECU-1871

Intel® Atom™ D510 Energy Controller with 2 x LAN, 3 x COM, IRIG-B, and I/O Extension

Features

- Onboard Intel Atom D510 1.66 GHz CPU
- IEC 61850-3 and IEEE-1613 compliant for substation application
- China Electricity Certificate IV level
- Built-in Time Synchronize IRIG-B
- Supports more Smart-Substation application I/O extension
- 1 x RS-232 port/ 2 x RS-485 isolation ports
- 2 x 10/100/1000Base-T RJ-45 ports
- Windows® CE 6.0, WES 2009, WES 7, and Linux ready solution
- Supports PCIe-104 & PCI-104 extension

Introduction

The ECU-1871 is compliant with Electricity Certificate IV Level (especially for China) and IEC 61850-3 certification. Featuring a fanless design with low power consumption and high performance Intel Atom D510 processor, the ECU-1871 comes with 2 x Ethernet, 1 x RS-232, and 2 x isolation RS-485 ports. The ECU-1871 supports two extension interfaces, PCI-104 & PCIe-104, and users can easily order other Energy I/O boards to integrate into the ECU-1871 and speed up your system development with an energy controller.

Specifications

General

- **Dimensions (W x D x H)** 220 x 150 x 89 mm (8.7"x 5.9"x 3.5")
- **Power Consumption** 24 W (Typical)
- **Power Requirements** 18 ~ 30 V_{DC} (e.g 24 V @ 2 A) (Min. 48 W), AT
- **Weight** 2.4 kg (Typical)
- **Mounting** 2U Rack-mount & Wall-mount
- **OS Support** WES 2009, WES 7, WinCE 6.0, Linux
- **System Design** Fanless

System Hardware

- **CPU** Intel Atom D510 1.66 GHz/ 512 KB L2 Cache
- **Memory** 2G DDRII 667 MHz
- **Indicators** LEDs for Power, HDD,IRIG,COM(Tx Rx) and LAN (Active Statue)
- **Storage** SSD: 1 x type I/II CompactFlash® slot
  HDD: 1 x integrated 2.5" SATA HDD bracket
- **Display** VGA, 1600 x 1200 @ 85 Hz
- **Watchdog Timer** Programmable 256 levels time interval, from 1 to 255 seconds for each tier
- **PCI-104/PCIe-104** Supports +3.3/ +5 V power

Communication Interface

- **Serial Ports** 3 Ports, 1 x RS-232, 2 x RS-485
- **Serial Ports Speed** RS-232 50 ~ 115.2 kbps
  RS-485 50 ~921.6 kbps
- **LAN** 2 x 10/100/1000Base-T RJ-45 ports
- **USB Ports** 4 x USB (include 1×internal USB), EHCI, Rev. 2.0 compliant

Time Synchronization Interface

- **Type** IRIG-B
- **Channel** 1
- **Support Format** IRIG-B00X according to IRIG STANDARD 04, 200-98
- **Input Signal** ST Multi-mode, 1 Isolation RS-485 (Optional)
- **Message Syntax** QQQHHMMSS(year, day, hour, minute & second)
- **Resolution of Time** 1s

Environment

- **Storage Humidity** 5 ~ 95% RH, non-condensing (IEC 60068-2-3)
- **Operating Temperature** -20 ~ 70°C (-4 ~158°F) @ 5 ~ 85% RH
- **Storage Temperature** -40 ~ 80°C (-40 ~176°F)

Ordering Information

- **ECU-1871 -A33CAE** Intel Atom Energy Controller with 2 x LAN, 3 x COM, IRIG-B and I/O Extension

Accessories

- **ECU-P1706-AE** 250 KS/s, 16 bit, Simultaneous 8-ch Analog input PCI-104 Card
- **ECU-P1300-AE** Vibration Signal Modulate, Vibration Sensor Driver, 8-order Low-pass Filter
- **ECU-P1702-LAE** 10 MS/s, 14bit, Simultaneous 4-ch Analog input PCI-104 Card

ECU-1911

Xscale @ PXA-270 520 MHz RTU with 8-ch 16-bit AI,32-ch DI,32-ch DO

CE FCC

Features

- Onboard Xscale @ PXA-270 520 MHz CPU
- 1 x RS-232 port
- 3 x RS-485 isolated ports
- 2 x 10/100Base-T RJ-45 ports
- 8-ch 16-bit differential Analog Input
- 32-ch isolated Digital Input
- 32-ch isolated Digital Output
- Built-in Window CE 5.0

Introduction

The ECU-1911 focuses on RTU monitor application. The ECU-1911 is also a standalone RTU that provides a 16-bit 8-ch A/D converter, 32-ch Relay and 32-ch Digital Input. This controller also supports four serial communication ports and two networking interfaces. You can seamlessly integrate your applications into the ECU-1911 and speed up your system development with this application ready RTU.

Specifications

General

- **Power Consumption** <10 W (Typical)
- **Power Requirements** 24 V_{DC} (Typical) (10 V_{DC} Min ~ 30 V_{DC} Max)
- **OS Support** Windows CE 5.0

System Hardware

- **CPU** Xscale @ PXA-270 520MHz
- **Memory** Onboard 64 MB SDRAM/ 32 MB Flash
- **Storage** 1 x type I/II Compact Flash slot
- **Display** VGA 640 x480 @ 60Hz

Digital Input

- **Channels** 32
- **I/O Type** Sink
- **Wet Contact** Logic 0: 0 ~ 10 V
Logic 1: 19 ~ 30 V
- **Isolation** 3000 V_{DC}
- **Connector** Terminal Block (#14 ~ 22 AWG)

Digital Output

- **Channels** 32
- **I/O Type** Power Relay Form A
- **Contact Rating** AC: 5A @ 250 V; DC: 30 V @ 5 A (Resistive Load)
- **Isolation** 500 V_{DC}
- **Connector** Terminal Block (#14 ~ 22 AWG)

Analog Input

- **Channels** 8 differential
- **Resolution** 16 bits
- **Sampling rate** 10 Hz/sec (total)
- **Input Impedance** 700 kΩ
- **Input Range** 0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 15 V, ±150 mV, ±500mV, ±1 V, ±5 V, ±10 V, ±15 V, ±20 mA, 4 ~ 20 mA
- **Accuray** Voltage : ± 0.1 %
Current : ± 0.2 %
- **Span Drift** ±25 ppm/°C
- **Zero Drift** ±6 μV/°C

Environment

- **Storage Humidity** 5 ~ 95% @ 40°C (non-condensing)
- **Operating Temperature** -20 ~ 70°C (-4 ~158°F) @ 5 ~ 85% RH
- **Storage Temperature** -40 ~ 80°C (-40 ~176°F)

I/O Interface

- **Serial Ports** 1 x RS-232, 3 x RS-485 (Automatic RS-485 data flow)
- **LAN** 2 x 10/100Base-T RJ-45 ports
- **USB Port** 1 x USB, OpenHCI, Rev. 1.1 compliant

Ordering Information

- **ECU-1911-R0CAE** Xscale @ PXA-270 520 MHz RTU with 8-ch 16-bit Analog Input, 32-ch Digital Input, and 32-ch Digital Output

ECU-4674

Intel® Atom™ N2600 Power & Energy Computers with 8xLAN, 18xCOM, 8DI, 8DO, 1x IRIG-B and 1 x PCI-104

Features

- China Electricity Certificate IV level
- IEC 61850-3 and IEEE 1613 compliant for substation automation applications
- Intel Atom N2600 1.6GHz processor
- 2 x RS-232 isolated serial ports, 16 x RS-232/485 isolated serial ports
- 2 x 10/100/1000 Base-T RJ-45 connector (Support teaming function and IEEE-1588 hardware capability) and 6 x 10/100 Base-T RJ-45 connector
- Support 1x internal CF, 2x 2.5" SATA HDD
- 5x USB2.0 (1x internal)
- Front or Rear wiring, programmable LED indicator
- Isolated 8-ch Digital Input and 8-ch Digital Output
- 1 x Time Synchronize IRIG-B
- Fan less design with no internal cabling
- Support Redundant isolated power with wide AC/DC input range
- iCDManager: intelligent Connectivity Diagnose and Manager

Introduction

ECU-4674 series products is compliant with Electricity Certificate IV level (especially for China) and IEC 61850-3 and IEEE 1613 certification , which Provide higher reliability and stability, suitable for any Global P&E automation market and harsh environment. With versatile communication interface to use for Smart substation Communication server and IED Analyzer to fulfill the Data Gateway & Protocol Conversion requirement easily. Featuring a fanless design with high performance Intel Atom N2600 processor, the ECU-4674 comes with 18 isolated serial ports, 8 x LAN and 1 x PCI-104 extension. With iCDMananger support , users can easy diagnose System & Communication and enhance maintenance efficiency, with Structured and functional module Internal design for easy customization and Fast assembly to fulfill the different kind of application.

Specifications

General

- **Certification** CE, FCC class A, CCC, Electricity IV level for China (Compatible IEC 61850-3, IEEE 1613)
- **Dimensions (W x D x H)** 440 x 220 x 88 mm
- **Enclosure** SECC & Aluminum
- **Mounting** 2U Rack mount
- **Power Requirements** Supports Redundant power input (Optional)
  Power 1: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}
  Power 2: 100 ~ 240 V_{AC} or 100 ~ 240 V_{DC}
- **Weight** < 5.5 kg
- **OS Support** WES7, Windows7,Linux
- **System Design** Fan less with no internal cabling

System Hardware

- **CPU** Intel Atom N2600, 1.6GHz
- **Memory** 2G DDR3 SDRAM built-in
- **Indicators** LEDs for Power, HDD, Programmable LED,IRIG-B, LAN(Active. Status) and Serial (Tx, Rx)
- **Storage** 1x internal CF, 2x 2.5" SATA HDD
- **Display** DB15 VGA connector
- **PC/104 slot** 1 x PCI-104
- **Watchdog Timer** Programmable 256 levels time interval, from 1 to 255 seconds for each tier

I/O Interface

- **Serial Ports** 18 Ports, 2 x RS-232, 16 x RS-232/485 (Automatic RS-485 data flow control)
- **Serial Port Speed** RS-232: 50 ~ 115.2 kbps,
  RS-422/485: 50 ~ 921.6 kbps (Max.)
- **LAN** 2 x 10/100/1000Base-T RJ-45 ports, teaming function supported,IEEE-1588 hardware capability,
  6 x 10/100Base-T RJ-45 ports
- **USB Ports** 5 x USB (include 1 x internal USB), UHCI, Rev. 2.0 compliant
- **Digital Input (optional)** 8-ch isolated digital input
  Wet contact: Logic 0:0~3 V_{DC}; Logic 1: 10~30 V_{DC}
  Isolation protect: 2000 V_{DC}, 30-50 V_{DC} over voltage protection
  Opto-Isolator Response:25us-interrupt capable
- **Digital Output (optional)** 8-ch isolated digital output
  2000 V_{DC} isolation, 200mA max/channel sink current
  Keeps output status after system hot reset
  Open collector to 40V (200mA maximum sink current load) 3 kHz speed
- **Programmable LED** 8-ch programmable LED indicator
- **Expansion** 1 x PCI-104

Time Synchronization Interface (optional)

- **Type** IRIG-B
- **Channel** 1
- **Support Format** IRIG-B00X according to IRIG STANDARD 04, 200-98
- **Message Syntax** QQQHHMMSS (year, day, hour, minute & second)
- **Resolution of Time** 1s

Environment

- **Storage Humidity** 95% @ 40°C (non-condensing)
- **Operating Temperature** IEC 60068-2-2 with 100% CPU/ I/O loading, 48 hrs
  -20~ 70°C (-4 ~ 140°F)
- **Operating Humidity** 20 ~ 95% (non-condensing)
- **Shock Protection** IEC 68 2-27 CompactFlash®: 30 G half sine, 11 ms
  HDD: 20 G half sine, 11 ms
- **Vibration Protection** IEC 68 2-64 (Random 1 Oct./min, 1hr/axis.)
  CompactFlash: 2 Grms @ 5 ~ 500 Hz
  HDD: 1 Grms @ 5 ~ 500 Hz

Ordering Information

- **ECU-4674-A53SAE** Intel Atom N2600 1.6Ghz 2GB RAM Power & Energy Automation Computers with 8xLAN, 18xCOM, 8DI, 8DO, 1x IRIG-B and PCI-104 Expansion
- **ECU-4674-LA53SAE** Intel Atom N2600 1.6Ghz 2GB RAM Power & Energy Automation Computers with 8xLAN,10xCOM, and PCI-104 Expansion

ECU-P1706
ECU-P1702
ECU-P1300

250 KS/s, 16bit, Simultaneous 8-ch Analog input PCI-104
10 MS/s, 12bit, Simultaneous 4-ch Analog input PCI-104

Vibration Signal Modulate Card

Features

- Designed for Smart-Grid Applications
- ECU-P1706 focuses on the Vibration/ Substation Signal Analytics (Wind-Power / Smart Substations)
- ECU-P1702 focuses on the Partial Discharge Detection and Analytical Devices (Smart Substations)
- ECU-P1300 focuses on Vibration Applications (Wind-power / Smart Substations)
- Easy to install to ECU-1871 Energy Controller

ECU-P1706

Specifications

General

- **Power Consumption** Typical: 5V @ 850mA
- **Bus Type** PCI-104
- **I/O Connector** Plug-in Terminal Block
- **Operating Temperature** -20 ~ 70°C (-4 ~158°F) @ 5 ~ 85% RH
- **Storage Temperature** -40 ~ 80°C (-40 ~176°F)
- **Storage Humidity** 5 ~ 95% RH, non-condensing (IEC 60068-2-3)

Analog Input

- **Channels** 8 differential
- **Resolution** 16 bits
- **Max. Sampling Rate** 250 KS/s
- **FIFO Size** 8K samples
- **Overvoltage Protection** ±30V
- **Input Impedance** 18MΩ
- **Sampling Mode** Software, onboard programmable pacer and external (TTL Level)
- **Trigger mode** Delay To Start Trigger, Delay To Stop Trigger
- **Trigger Source** Analog Trigger, External Trigger
- **Input Range** (V. Software Programmable)

Bipolar	±10V	±5V	±2.5V	±1.25V
Accuracy % of FSR±1LSB	0.04	0.04	0.06	0.08

Timer Counter

- **Channels** 2
- **Resolution** 32 bits
- **Mode** In: Event counting, Frequency In, PWM In
- **Compatibility** Isolated 24V_{DC}
- **Max. Input Frequency** 1 MHz
- **Max. Output Frequency** 1 MHz

Ordering Information

- **ECU-P1706-AE** 250 KS/s, 16bit, Simultaneous 8-ch PCI-104

ECU-P1702

Specifications

General

- **Power Consumption** 5V @ 700mA (Max.) 3.3V @ 850mA (Max.)
- **Bus Type** PCI-104
- **I/O Connector** BNC
- **Operating Temperature** -20 ~ 70°C (-4 ~158°F) @ 5 ~ 85% RH
- **Storage Temperature** -40 ~ 80°C (-40 ~176°F)
- **Storage Humidity** 5 ~ 95% RH, non-condensing (IEC 60068-2-3)

Analog Input

- **Channels** 4 Single-ended
- **Resolution** 12 bits
- **Max. Sampling Rate** 10 MS/s
- **FIFO Size** 32K samples
- **Overvoltage Protection** ±15V
- **Input Impedance** 50 ohm/1M ohm/Hi Z switch selectable
- **Sampling Mode** Software, onboard programmable pacer and external (TTL Level)
- **Trigger mode** Delay To Start Trigger, Delay To Stop Trigger
- **Trigger Source** Analog Trigger, External Trigger
- **Input Range** ±5V, ±2.5V, ±1V, ±0.5V

Ordering Information

- **ECU-P1702-LAE** 10 MS/s, 12bit, Simultaneous 4-ch PCI-104

ECU-P1300

Specifications

General

- **Power Consumption** Typical: 5V @ 700mA; 12V @ 100mA
- **Operating Temperature** -20 ~ 70°C (-4 ~158°F) @ 5 ~ 85% RH
- **Storage Temperature** -40 ~ 80°C (-40 ~176°F)
- **Storage Humidity** 5 ~ 95% RH, non-condensing (IEC 60068-2-3)

Vibration Modulate

- **Channels** 8
- **Input Range** ±5V (Max.)
- **Output Range** ±10V
- **Input Coupling** AC
- **Sensor Current Supply** 4mA ±1%, 24V compliant
- **Precision** 0.1%
- **Drive Ability** 0 ~ 5K
- **Sensor Signal Gain** 1
- **Signal Gain** 1
- **Analog Filter** 8th order Lowpass Bessel Filters
- **Filter Adjustable** 0.1 Hz ~ 25KHz Adjustable by Software Program

Ordering Information

- **ECU-P1300-AE** Vibration Signal Modulate Card

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