# EMIO-100S-MPU01E H/S Serial Module Datasheet

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## Revision History

| Rev. | Date | History |
|---|---|---|
| 0.1 | 2013/10/21 | 1. 1st draft |
| | | |
| | | |
| | | |

# 1. Overview

Advantech EMIO-100S, USB to High-Speed Serial module, is a high-quality electronic component developed and manufactured. Fully USB 2.0 compliant, the adapter supports bi-directional serial interface communications. The form factor of EMIO-100S High-Speed Serial module is designed the full-size Mini PCIe & module type combo solution. It's following the MiniPCIe definition and added USB pin header.

The EMIO-100S module is a family of High-Speed communication devices. This model, EMIO-100S, provides a simple method of adapting legacy RS232, RS422 and RS485 serial devices to a modern USB port. This is accomplished by incorporating the industry standard USB2.0 High-Speed serial bridge chip. It is as easy to install as a serial cable. Connect the adapter to a serial port then plug it into a computer's USB port or Hub.

## 2. Electrical Features

- Single chip USB to High-Speed serial port with a variety of configurations.
- Serial COM port with isolated protection.
- Entire USB protocol handled on the chip. No USB firmware programming required.
- USB 2.0 High Speed (480 Mbits/sec.) and Full Speed (12 Mbits/sec.) compatible.
- RS232 Data Rates: 300bps to 1 Mbps
- RS422/RS485 Data Rates: 300bps to 10 Mbps
- FIFO Buffer: 4K byte transfer, 4K byte receiver
- UART Interface supports 7/8 bit data, 1/2 stop bits, and Odd/Even/Mark/Space/No Parity.
- UHCI/OHCI/EHCI host controller compatible.
- Extended -40°C to 85°C industrial operating temperature range.
- Reserved another USB pin header on the module
  (The EMIO-100S model is ready the USB signal on both MiniPCIe side (Pin 23, 25, 31, 33) and Pin Header (USB1). While using, please kindly select only one of the two.)

## 3. Environmental Features

- **Temperature Ranges**
  - Operating : -40℃ ~ 85℃
  - Storage : -40℃ ~ 85℃

- **Humidity**
  - 25% ~ 95%, 40℃

- **Random Vibration Test**
  - 5 - 500Hz, PSD 0.028G²/Hz,3.5Grms
  - 3 axes, 1 hr/per axis

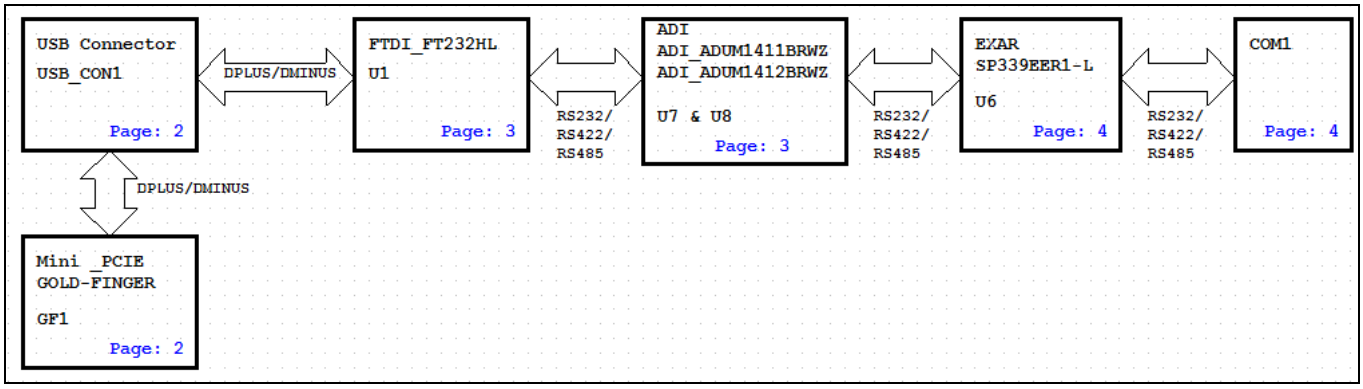
- **Acquired RoHS Certificate**

- **Dimension：50.95 mm x 30 mm x 10 mm**

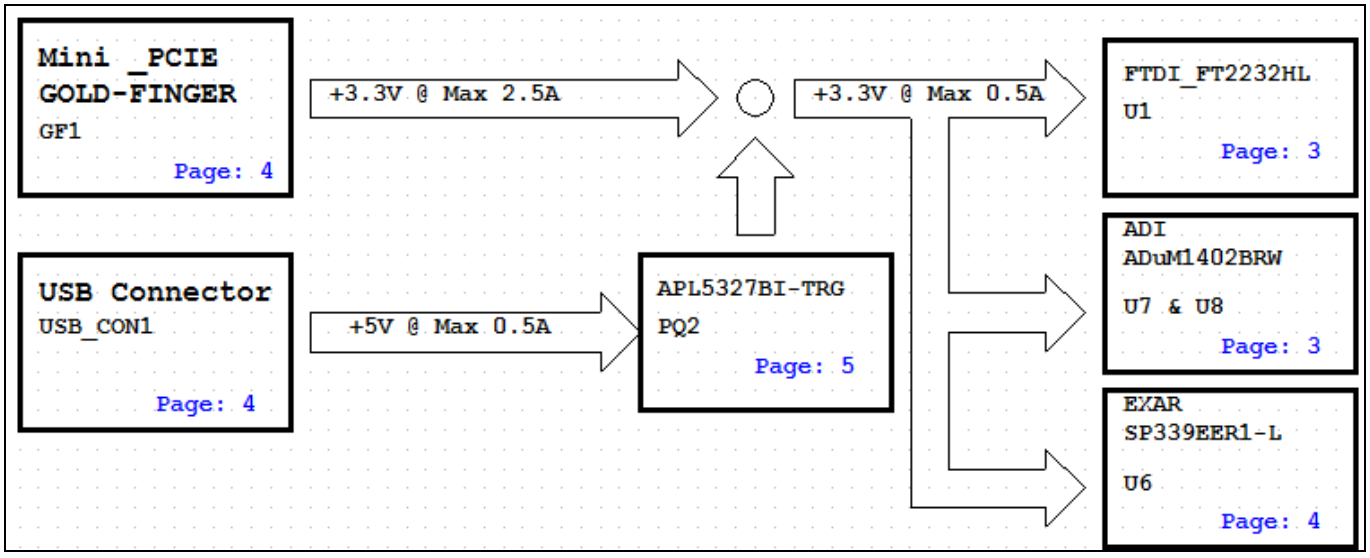
- **Weight：30 g**

## 4. Block Diagram

Below Figure shows the operation of Advantech EMIO-100S High-Speed Serial module from the system level, including the major hardware blocks.




System Block Diagram




Power Distribution

# 5. Pin Assignment and Description

## 5.1 Connector and LED Location

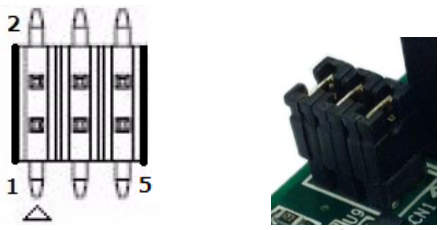

| LED # | Function |
|---|---|
| LED1 | Red, System power ON/OFF |
| LED2 | Green, UART Tx Active/OFF |

## 5.2 RS232/485/422 mode Jumper Setting, CN1

The jumper setting connector, CN1, is a 2.0mm 3x2-pins 180 degree, Male type pin header connector. The pins are numbered as shown in the table below.

Cards can be configured by setting jumpers. A Jumper is a metal bridge used to close an electric circuit. It consists of tw metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To close a jumper, you connect the pins with the clip. To open a jumper, you remove the clip.

| Function | (1-2) | (3-4) | (5-6) |
|---|---|---|---|
| RS-232 | Close | Open | Open |
| RS-485 | Open | Close | Close |
| RS-422 (Default) | Close | Close | Close |

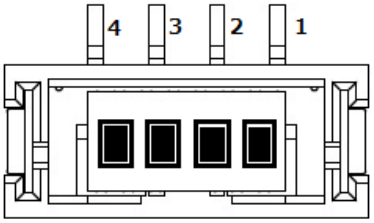


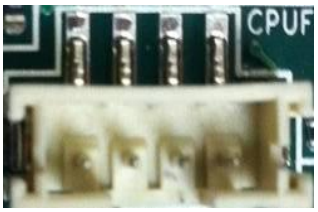

**Jumper Setting Connector**

## 5.3 USB Interface Connector, USB_CON1

The USB interface connector, USB_CON1, is a 2.0mm 4-pins 180 degree, Male type Wafer Box connector. The pins are numbered as shown in the table below.

| USB_CON1 Pin # | Signal Name | Signal Function |
|---|---|---|
| 1 | +5V_CON | USB Power (+5V) |
| 2 | USB_DM_CN | USB D- |
| 3 | USB_DP_CN | USB D+ |
| 4 | GND | Ground |



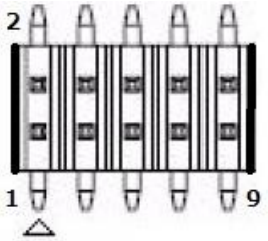



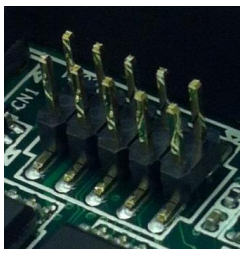

**USB Connector**

## 5.4 Serial COM Port, COM1

The EMIO-100S has designed 1-channel of high speed COM port which is COM1. It is a 2.0mm 5x2-pins 180 degree, Male type pin header connector. It could be used for RS232/ 485/ 422 modes depend on each application. The pins are numbered as shown in the table below.

| COM1 Pin # | Signal Name | COM1 Pin # | Signal Name |
|---|---|---|---|
| 1 | COM1_DCD# | 2 | COM1_DSR# |
| 3 | COM1_RXD | 4 | COM1_RTS# |
| 5 | COM1_TXD | 6 | COM1_CTS# |
| 7 | COM1_DTR# | 8 | COM1_RI# |
| 9 | GND | 10 | N/A |

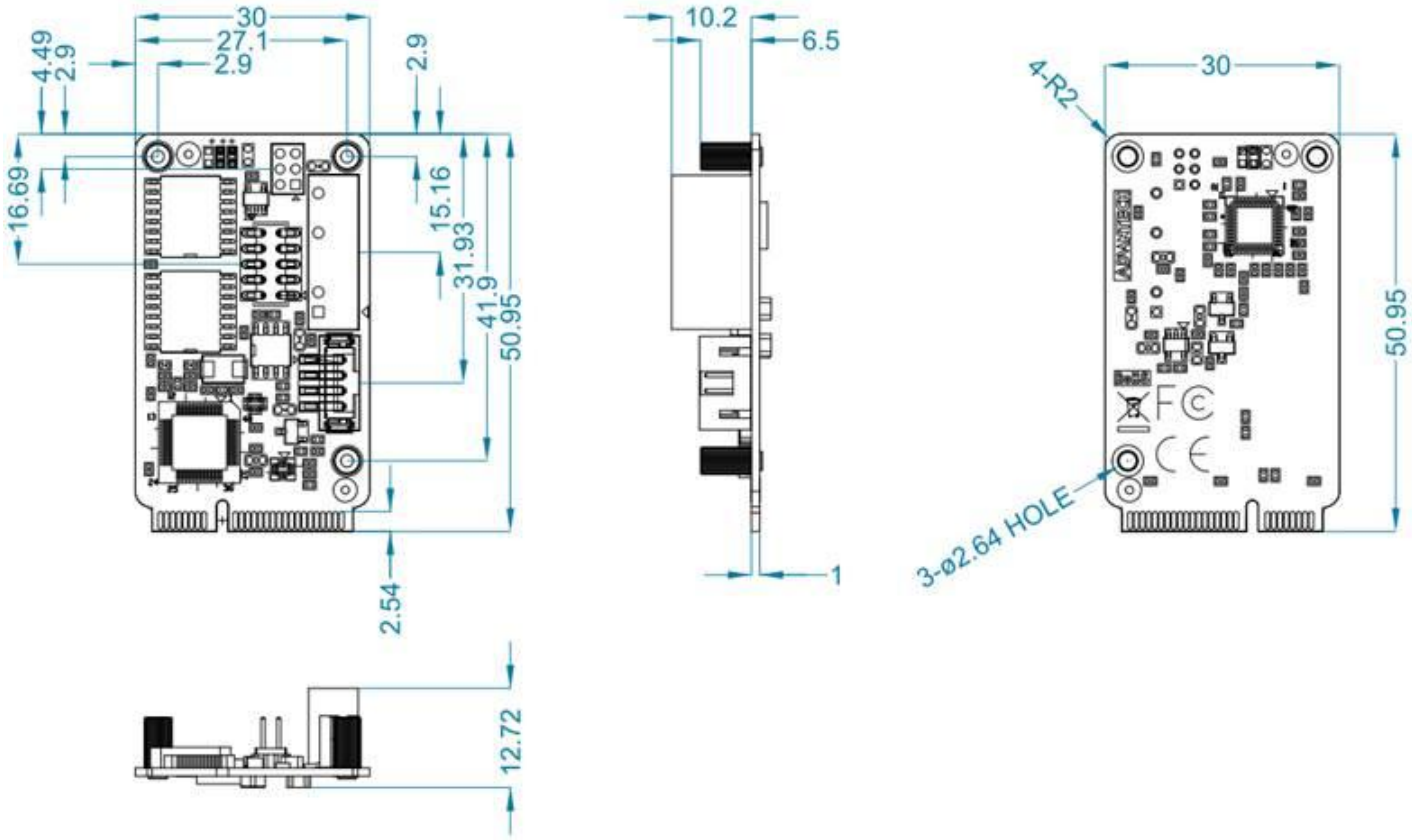


**Serial COM Connector**

## 6. Physical Dimension

**EMIO-100S High Speed Serial module (Unit: mm)**



## Appendix I: Part Number Table

| Product Description | Advantech P/N |
|---|---|
| Advantech EMIO-100S High Speed Serial module, 1-Ch, USB I/F (-40~85°C) | EMIO-100S-MPU01E |
| | |

# Appendix II: Peripheral Cable recommendation

## 1. COM port cable

| Advantech P/N | Description | Picture |
|---|---|---|
| 1700019116 | Cable, D-SUB 9P(F) to 2x5P-2.0mm, L=25cm |  |
| 1700020641-01 | Cable, D-SUB 9P(F) to 2x5P-2.0mm, L=10cm |  |
| 1700021326-01 | Cable, D-SUB 9P(F) to 2x5P-2.0mm, L=20cm |  |
| 1700021937-01 | Cable, D-SUB 9P(F) to 2x5P-2.0mm, L=45cm |  |

## 2. Between the USB_CON1 and Main Board

| Advantech P/N | Description | Picture |
|---|---|---|
| 1700019261 | Cable, 2x5P-2.0mm to 1x4P-2.0mm, L=40cm |  |
| 1700020814-01 | Cable, 2x5P-2.0mm to 1x4P-2.0mm, L=50cm |  |
| 1700021861-01 | Cable, USB-A(F) to 1x4P-2.0mm, L=15cm |  |
| 1700013354 | Cable, USB-A(F) to 1x4P-2.0mm, L=125cm |  |

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