

Delta-Sigma ADC MAD2402

Daughter Board

Explanation Manual

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1. Introduction

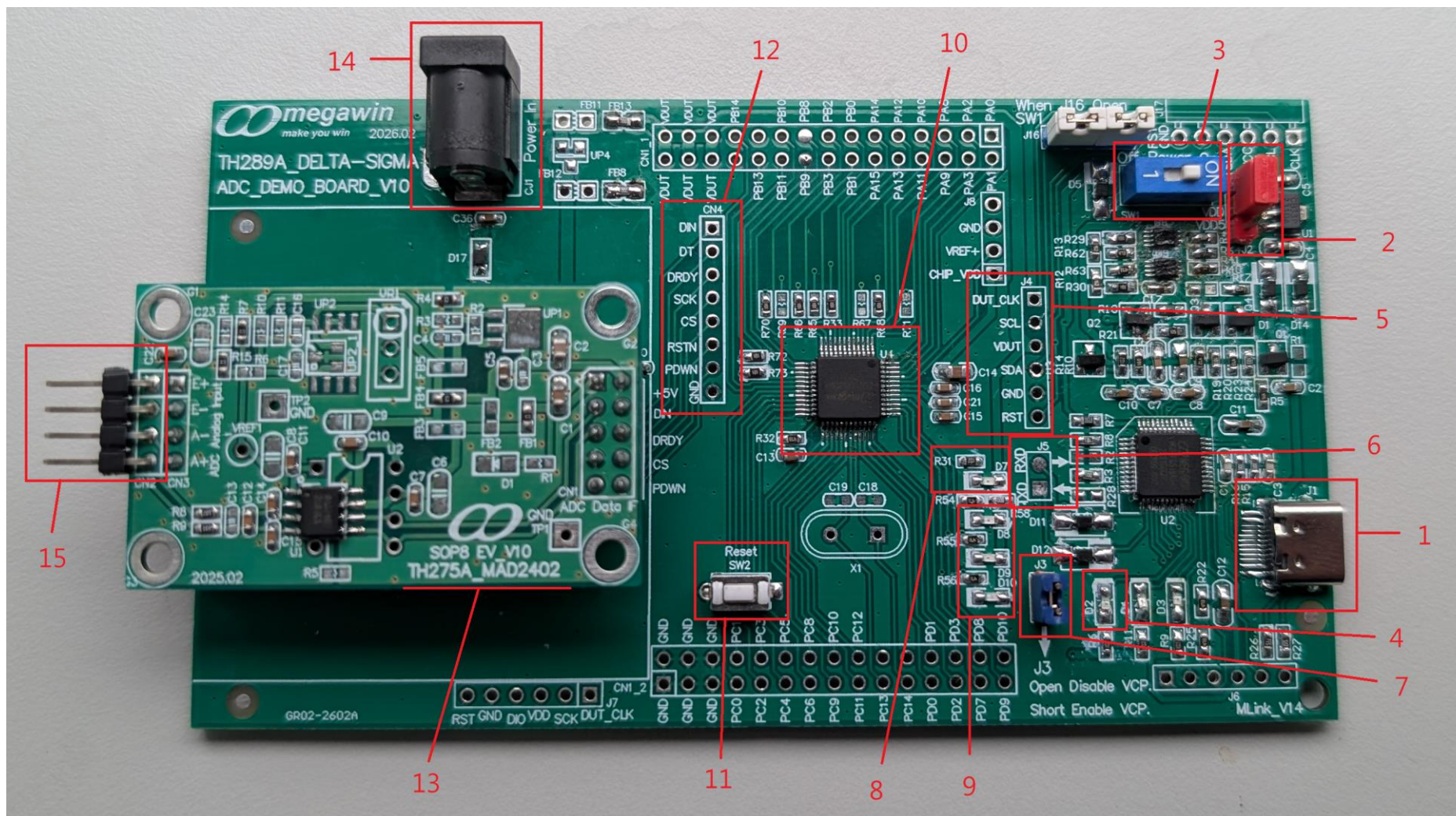
The chip is embedded a precision 24-bit analog-to-digital converter and designed to provide high-resolution measurement solutions for the most applications. The converter is implemented a low-noise input buffer, a low noise programmable gain amplifier (PGA), a 4th-order delta-sigma ($\Delta\Sigma$) modulator and a digital filter. It's designed to easy use for weigh scales and other applications by connecting directly with the external bridge sensor. The chip is packaged in an SOP-8 or DIP-8.

A flexible input multiplexer handles differential signals input. The selectable input buffer can enable to increases the input impedance. The PGA provides gains from 1 to 128. The digital filter can optimize a resolution of up to 24 bits noise-free and a data rate of up to 1280 samples per second (SPS).

The chip is built-in embedded Power-On Reset (POR) circuit to generate internal hardware reset signal to reset the chip. For power management and reset control, the chip is built-in a power supervisor for power down control and wakeup control. Also the chip is embedded a high precision internal oscillator (IHRCO) as internal clock sources.

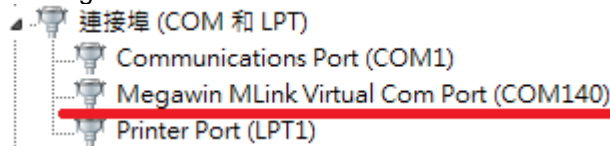
The communication is handled by a 2-wire serial interface to get ADC code and control the ADC settings from external MCU device. There is no programming needed for the internal registers to operate three designed fixed ADC conversion modes, (1) 10 SPS with PGA=128 (2) 40 SPS with PGA=128 (3) 40 SPS for DVDD and AVDD supply voltage difference measurement.

1.1 TH275A MAD2402 and Main Board Whole Picture



1.2 TH275A MAD2402 and Main Board Hardware Instruction

1. J1: Micro USB Connector.
2. J2: Power select.
 - a. VDD5 – USB 5V Output.
 - b. VDD – Select 5V to MG32F02A032 serial.
3. SW1: Control U4 power on/off.
4. D2: PC identify MLink successful when D2 turn ON, but only programming turn ON at Win10.
5. J4: Connector in ICE adaptor(MLink) for connecting with main board to program MG32F02A032.
J7: Connector in main board for connecting with ICE adaptor(MLink).
6. J5: Connector in ICE adaptor(MLink) for connecting with main board to transfer UART data.
7. J3: Virtual Com Port function selection, when J3 open and plug out → plug in PC, VCP function is disable. when J3 short and plug out → plug in PC, VCP function is enabled. After installing driver(how to install driver, refer the [2. Driver Install](#)), Device Manager will appear “Megawin MLink Virtual Com Port” as below figure.



“Megawin MLink Virtual Com Port” support as below as baud rate only:

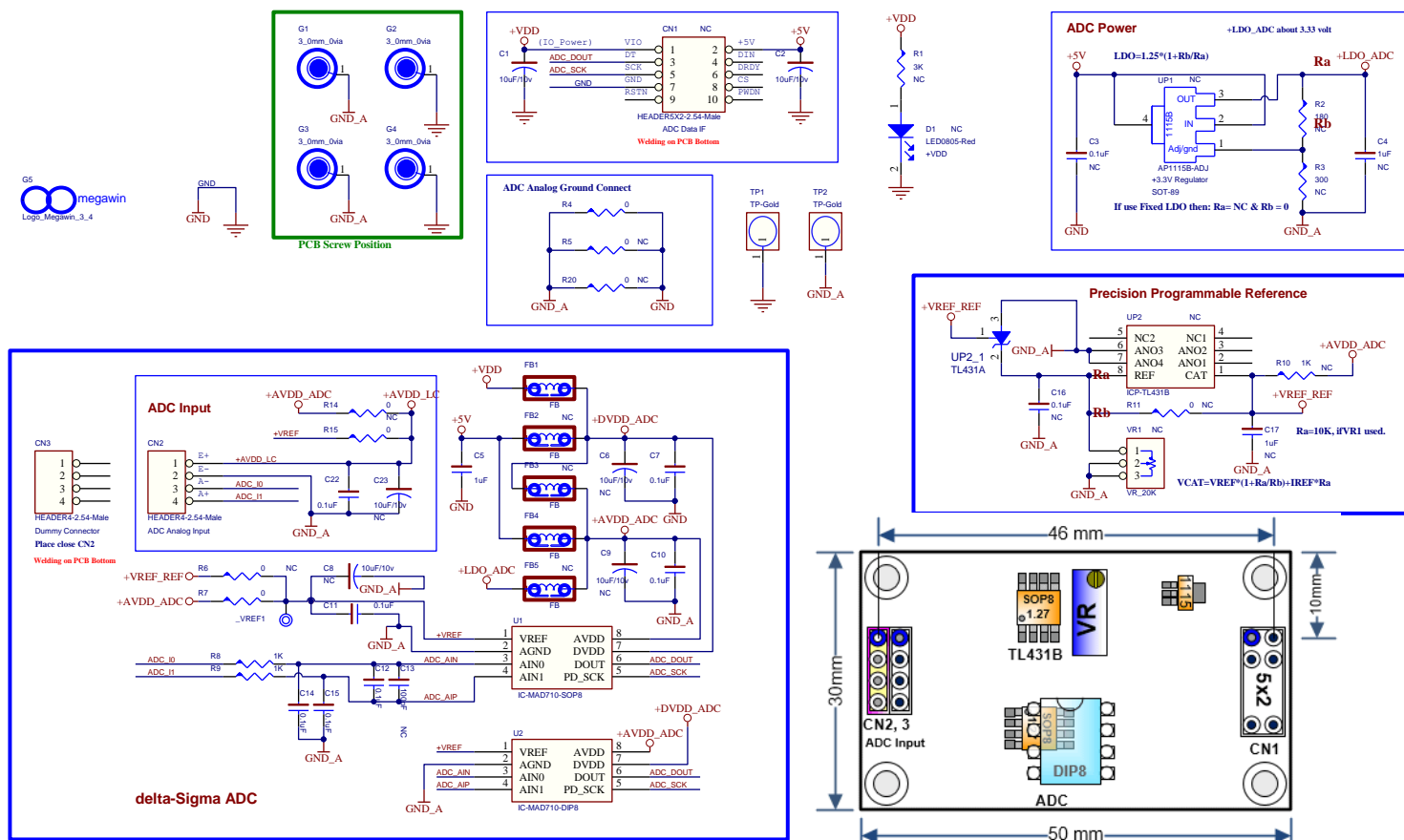
600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 128000, 7200, 14400, 28800...etc bps.

“Megawin MLink Virtual Com Port” also support **Stop Bit 1** only.

8. D7: Demo board power indicator LED.
9. D8, D9, D10: IO LED.
10. U4: MG32F02A032 LQFP-48 package.
11. SW2: Pressing the button will trigger external reset signal to U4(MG32F02A032).
12. CN4: MAD2402 control signal connector, user can measure signal through the connector.
13. DB: TH275A_MAD2402 daughter board.
14. CJ1: DC Jack is need to input 9V ~ 12V.
15. CN2: TH275A_MAD2402 ADC input connector.

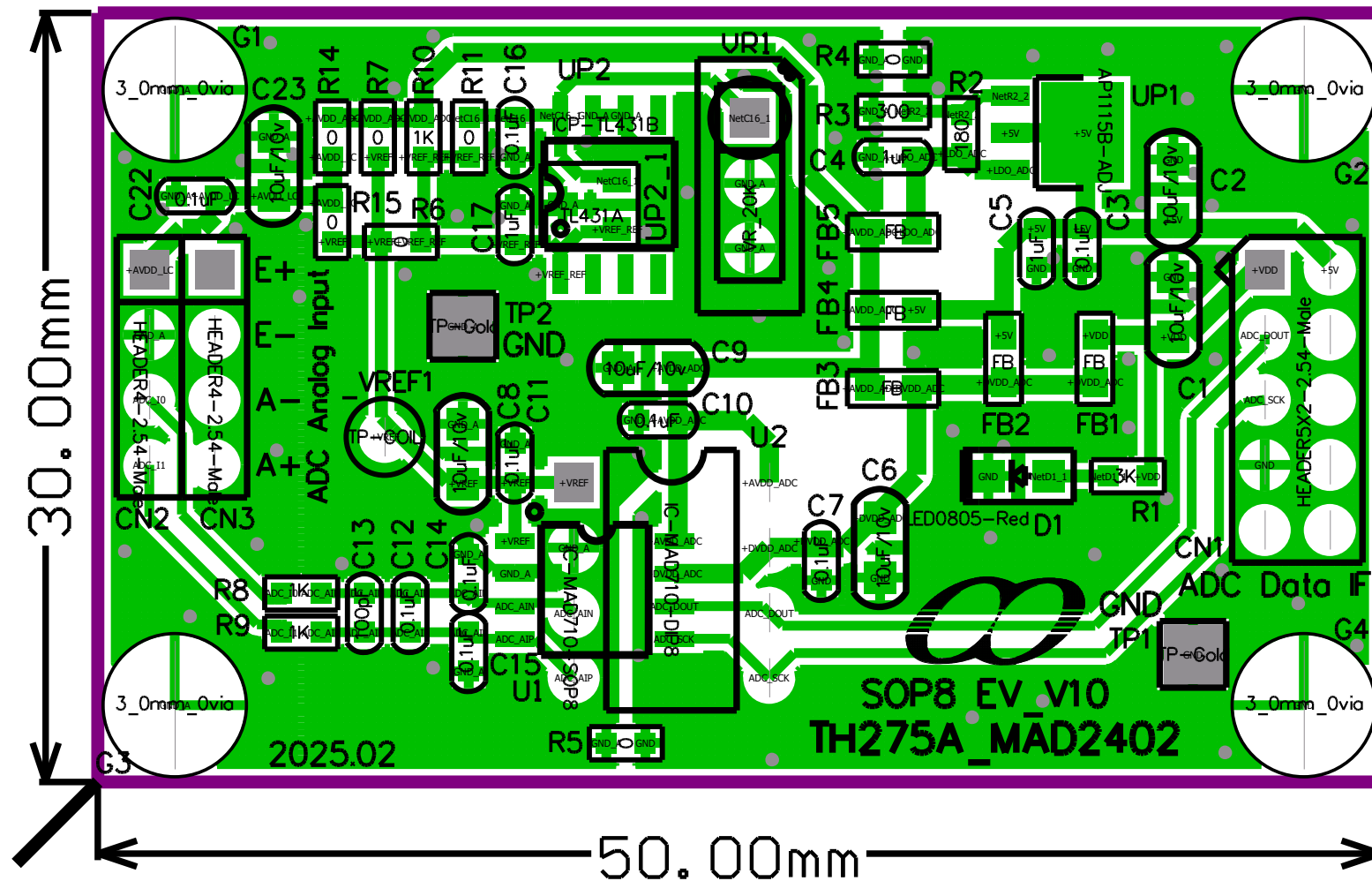
1.3 TH275A MAD2402 Daughter Board Circuit

1.3.1 MAD2402 Circuit

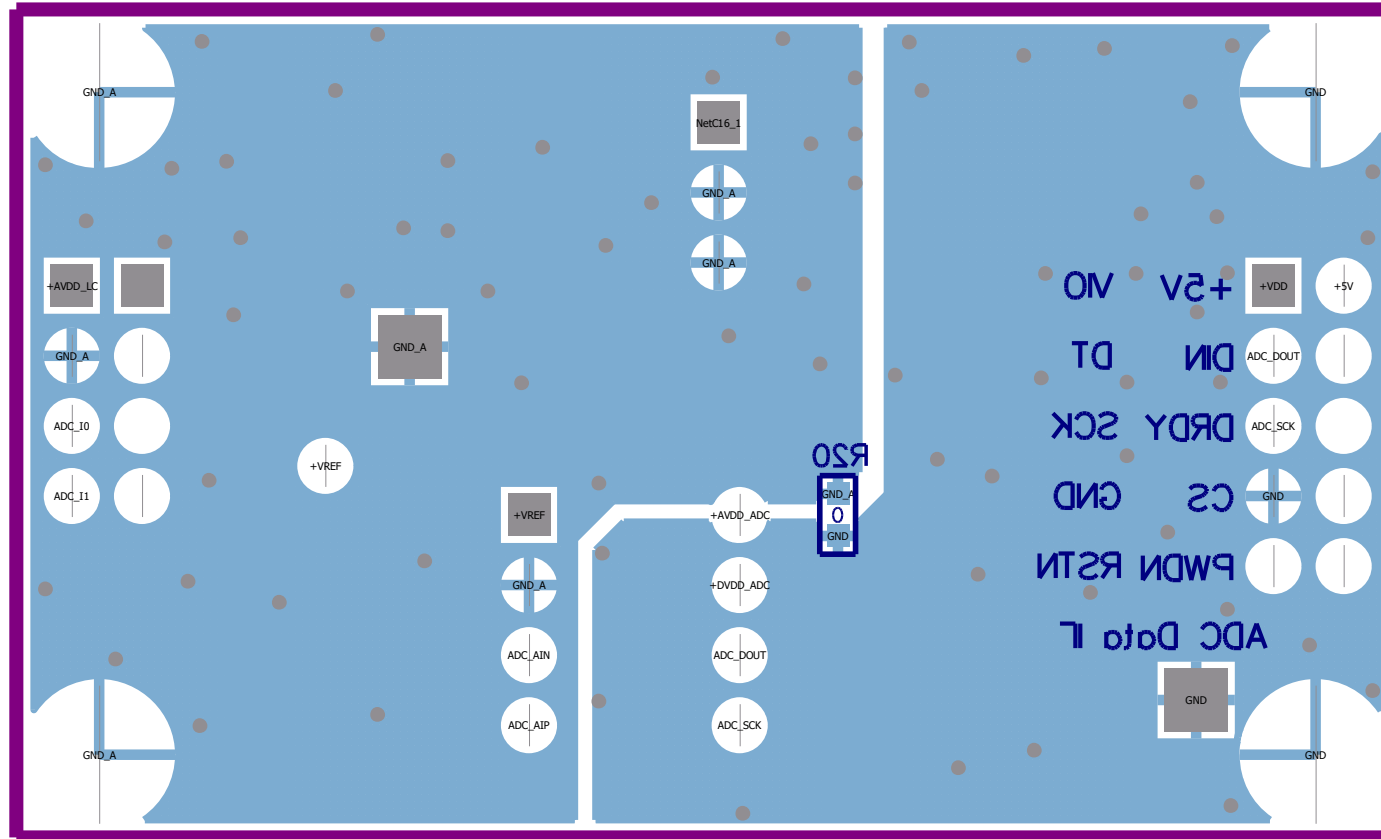


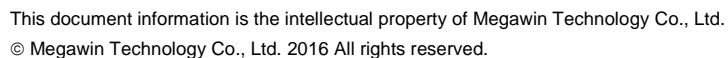
1.4 TH275A MAD2402 Daughter Board PCB

Top



Bottom

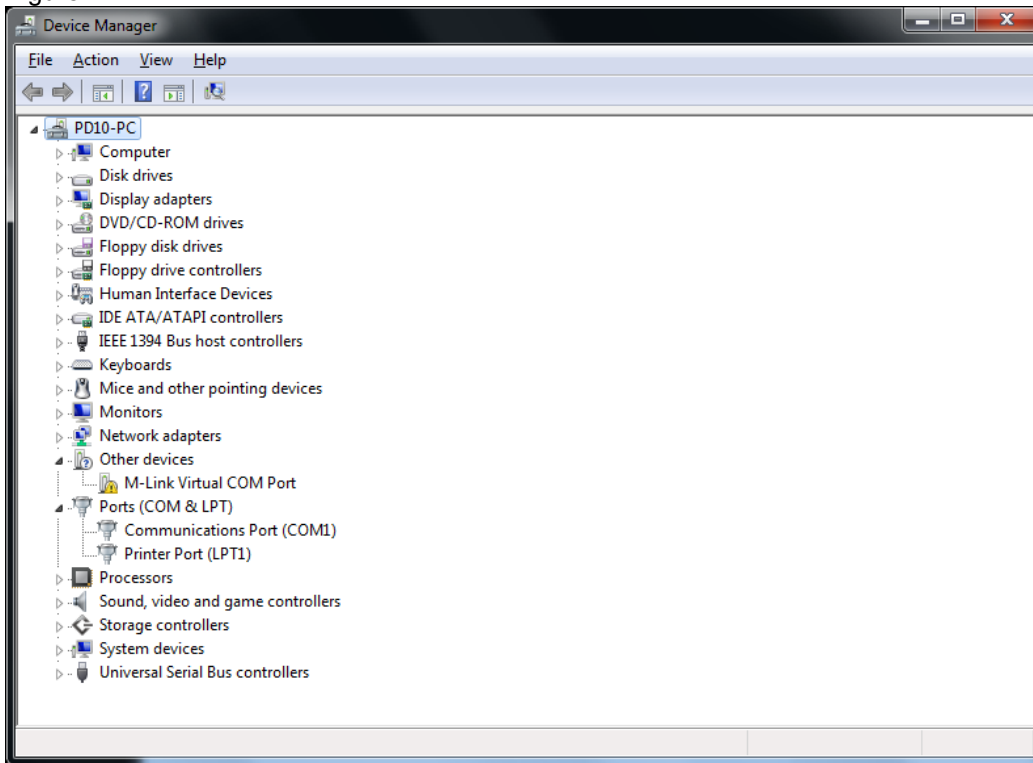




2. Driver Install

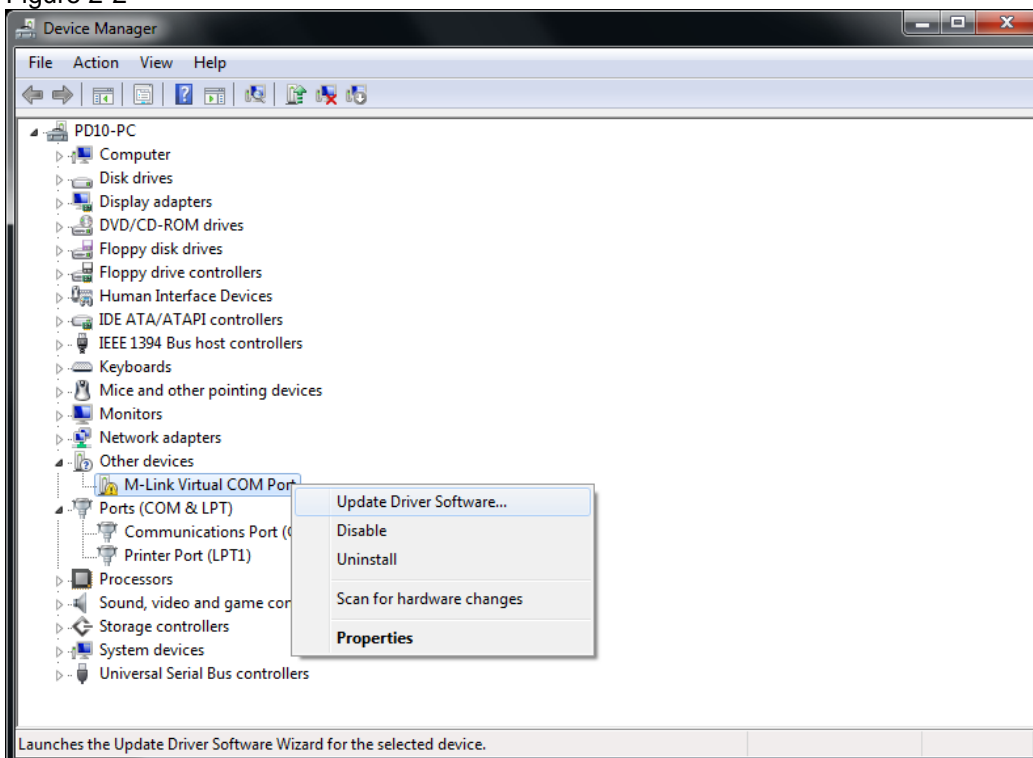
Step 1: The user short J3 plug Delta-Sigma ADC Demo Board into any USB port in a PC, then open Device Manager.

Figure 2-1



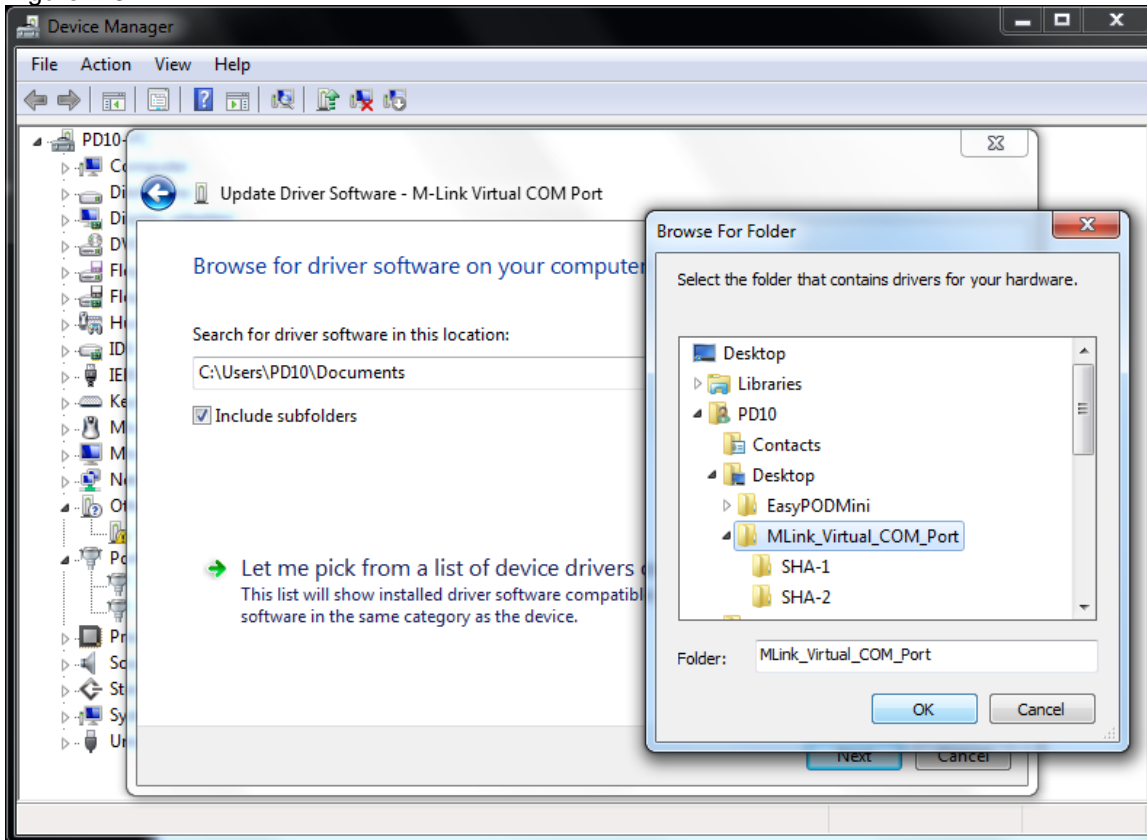
Step 2: Click “Right” key on Megawin MLink Virtual Com Port and “Update Driver Software”...

Figure 2-2



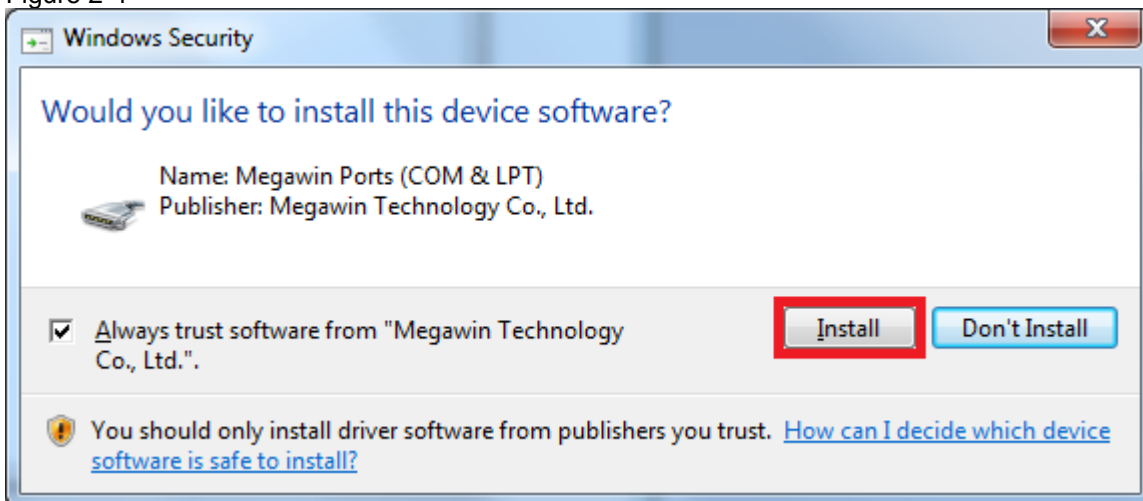
Step 3: Indicate Megawin MLink Virtual Com Port Driver path in the user's PC, OS will select SHA-1 or SHA-2 automatic.

Figure 2-3



Step 4: Click "Install" and wait a while.

Figure 2-4



Step 5: The user install driver successfully...

Figure 2-5

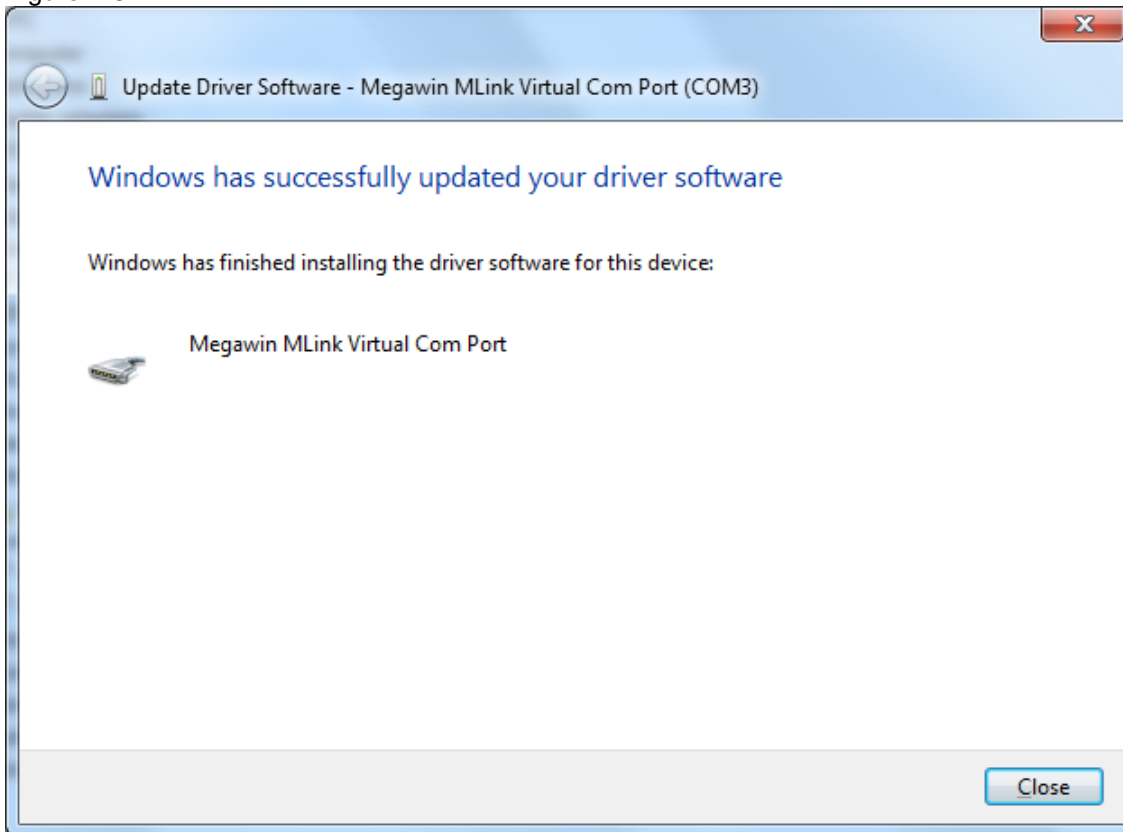
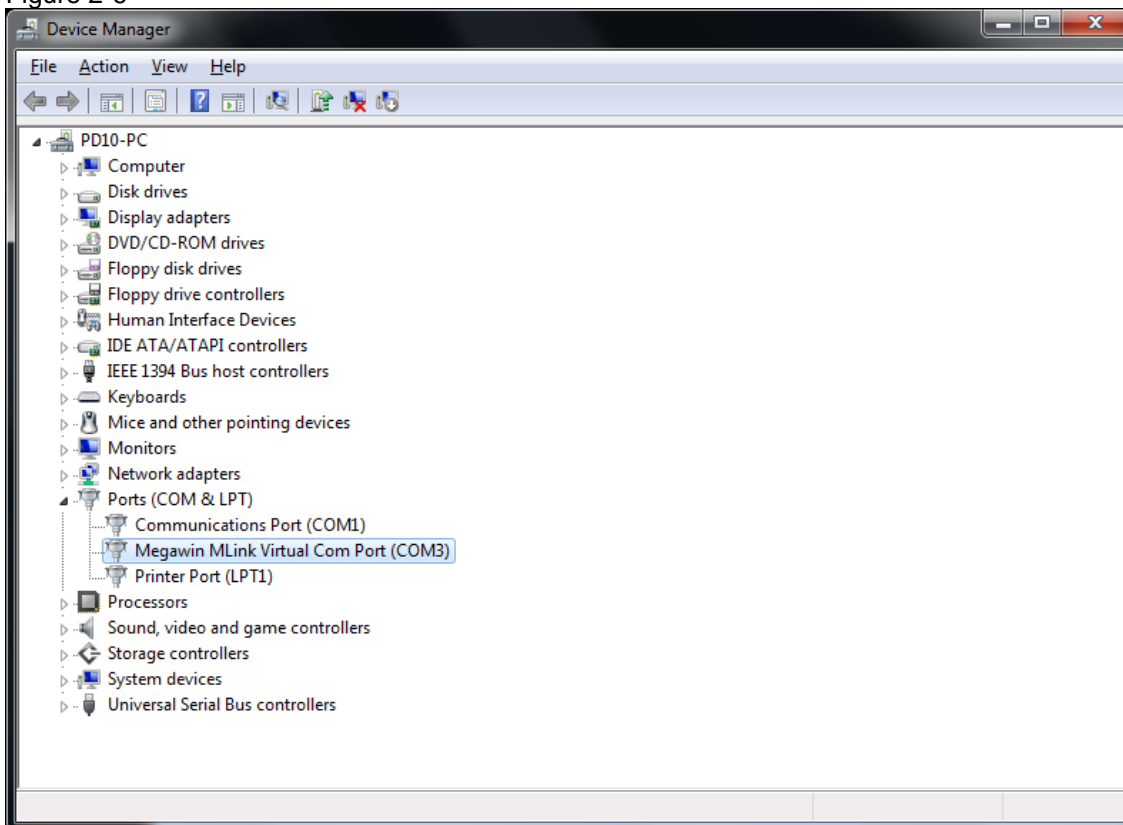


Figure 2-6



3. Revision History

Revision	Description	Date
V1.00	(1) New Create.	2026/04/07

4. Disclaimers

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Life Support — This product is not designed for use in medical, life-saving or life-sustaining applications, or systems where malfunction of this product can reasonably be expected to result in personal injury. Customers using or selling this product for use in such applications do so at their own risk and agree to fully indemnify Megawin for any damages resulting from such improper use or sale.

Right to Make Changes — Megawin reserves the right to make changes in the products - including circuits, standard cells, and/or software - described or contained herein in order to improve design and/or performance. When the product is in mass production, relevant changes will be communicated via an Engineering Change Notification (ECN).