tinyMicon MatisseCORE™

matiseye™-adapter pro User's Guide

Debug adapter for Matisse

No.67UG019E Rev.001
February 2024

Revision history

Date	Version	Remarks
2024/01/23	Rev.001	First release

Table of Contents

For Safety

Please read the following content first and make sure you fully understand the instructions before using the product for your safety. Additionally, this product is intended only for research and development, demonstration, and evaluation purposes, and is not a final product suitable for general consumer use. Therefore, please do not use this product, in whole or in part, as a final product. This product should only be used by professionals familiar with the risks associated with handling electrical and mechanical parts, solely for the purposes of research and development, demonstration, and evaluation.

・MEANING OF THE DISPLAY

Indicates content that may lead to loss of life or serious injury.

Indicates content that may lead to minor injuries or damage to property.

・MEANIG OF THE SYMBOLS

Indicates prohibited actions.

Indicates instructions for actions that should be taken.

WARNING	
	・Do not disassemble or modify beyond what is described in the user's guide. It may cause fire or electric shock. ・Do not put water or foreign objects inside. It may cause fire or electric shock. ・Do not use the main unit or cables when they are damaged. It may cause fire or electric shock. ・Do not use with wet hands. It may cause electric shock.
	・Please connect cables correctly and securely. Incorrect connection may cause fire or electric shock. ・If you suspect a malfunction, stop using the device immediately, unplug the cables, and turn off the power. Continuing to use a malfunctioning device may cause fire or electric shock. ・If you notice smoke or a strange smell, stop using the device immediately, unplug the cables, and turn off the power. This may prevent fire or electric shock.

CAUTION	
	・Please do not use in places where water droplets, humidity, or dust are prevalent. It may cause fire or electric shock. ・Do not use inside a car during the summer or under direct sunlight. High temperatures may cause fire, electric shock, or malfunction. ・Do not place the product in unstable locations. It may cause the product to touch the body, leading to electric shock or injury. ・Do not use in places with significant vibration or where corrosive gases are generated. It may cause fire, electric shock, or malfunction.
	・Properly arrange the main unit and cables. Careless disconnection or snagging of cables may cause injury. ・Please use the cables and accessories provided. Using others may cause fire, electric shock, or malfunction. ・When not in use for an extended period, unplug the cables and turn off the power. It may cause fire.

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1. Overview

1.1. What is matiseye™-adapter pro?

The matiseye™-adapter pro is a debug adapter used for the development, debugging, and programming of ICs for programs operating on the Matisse CPU core. It is used by connecting to a PC with the matiseye™-studio integrated development environment installed and an IC equipped with the Matisse core. The proprietary Matisse debug I/F enables No-break (NB) access, which reads the state of the IC's internal registers quickly without disturbing the CPU operation. Additionally, the values of the read registers can be graphically confirmed using the dedicated software RapidScope™.

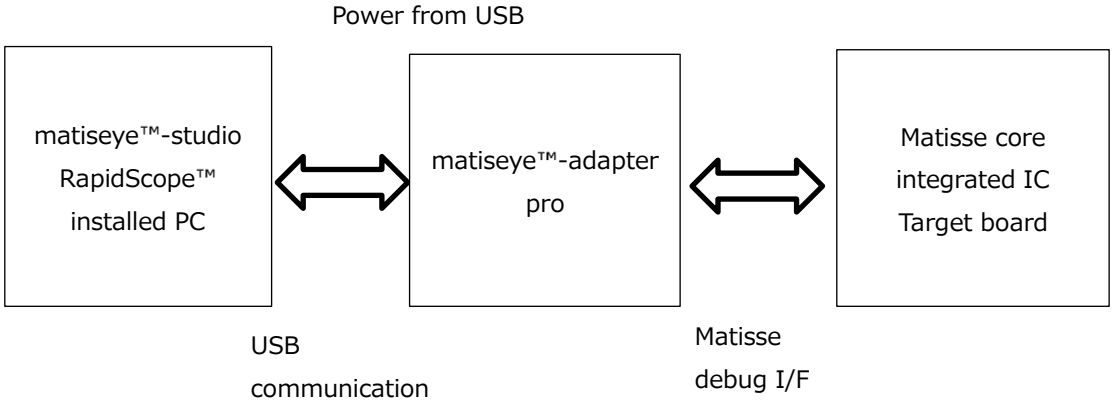

Figure 1. matiseye™-adapter pro overview

1.2. Names

Figure 2. Top

Figure 3. Inside

Table 1. Name and functions of the main unit

No	Name	Function
1	USB Terminal	Terminal for connecting the PC and matiseye™-adapter
2	Debug I/F Terminal	Terminal for connecting the matiseye™-adapter and the target.
3	COM lamp	Illuminates in debug mode.
4	Slide switch	Switch for settings.

1.3. Contents

・matiseye™-adapter pro main unit

・1.27mm pitch flat cable

・USB cable(Type-A/Micro-B)

1.4. Ratings

・Power Supply

The power supply operates at 5V provided by USB bus power.

・IO Voltage

The I/O voltage of the Matisse debug I/F is fixed at 3.3V.

1.5. Debug I/F Terminal

The pin configuration for the Debug I/F terminal to connect to the target board is as follows. Please refer to the pin configuration below when designing the target board. Additionally, a pull-up resistor is required for DBDATA, and a pull-down resistor is required for DBCLK. Please prepare these on the target board.

Table 2. Debug I/F terminal description

No.	Name	Remarks	No.	Name	Remarks
1	VCC		2	DBDATA	Pull up 100kohm required
3	GND		4	DBCLK	Pull down 22kohm required
5	GND		6	Reserved	
7	Reserved		8	Reserved	
9	GND		10	Reserved	

Figure 4. Debug I/F Terminal and cable direction

1.6. The method for removing the case

By unscrewing the two screws on the back of the case and opening the top cover, you can access the circuit board. This allows you to set switches, such as the operation mode, on the board. When opening the top cover, please be careful not to damage the components of the LED area.

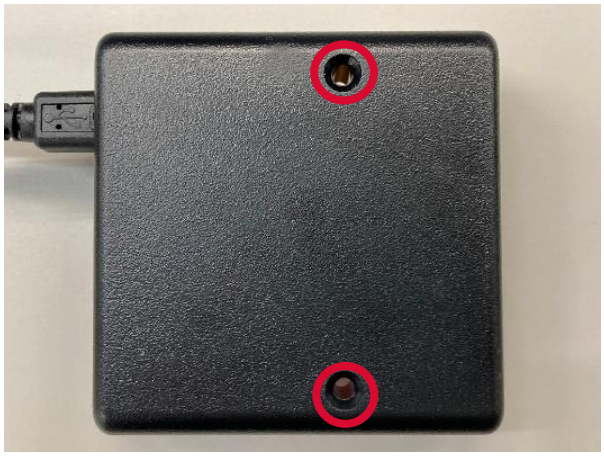

Figure 5. Positions of the screws

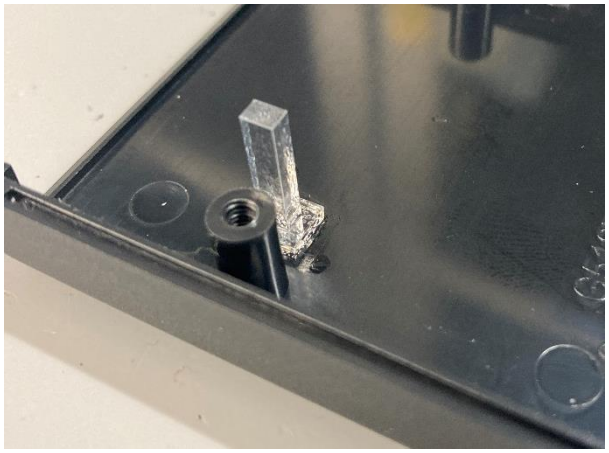

Figure 6. Bottom side of the top cover(LED area)

2. Description of functions

2.1. How to Use

① Connect the flat cable to the target board.

② Connect the USB cable to the PC.

③ Launch matiseye™-studio. When the debug adapter is recognized, the COM lamp will light up. The COM lamp will flash when the PC and matiseye™-adapter pro are communicating. For instructions on software operation, please refer to the matiseye™-studio user's guide.

2.2. Details of functions

①Debug I/F Terminal

This terminal is used to connect to the target board. The pin configuration and connection to the microcontroller are as follows. The Reserved pins will be used for future expansions of the main unit's functions.

Table 3. Signal name of Debug I/F

CN102 pin No.	Signal name
1	VCC
2	DBDATA
3	GND
4	DBCLK
5	GND
6	Reserved
7	Reserved
8	Reserved
9	GND
10	Reserved

②LED

The LEDs on the matiseye™-adapter pro indicate the status of the device. During debugging operations and firmware updates, different LEDs will light up. The LEDs that light up are as follows:

Table 4. Name and color of LED

LED part No.	Color	Description
D221	Yellow	In Debugger mode
D222	Yellow	In Firmware update mode

③Slide switch

The slide switch will be used for future expansions of the main unit's functions. Switch No.2 can be turned ON to update the firmware of the matiseye™-adapter pro via USB. For details, please refer to section 2.3.

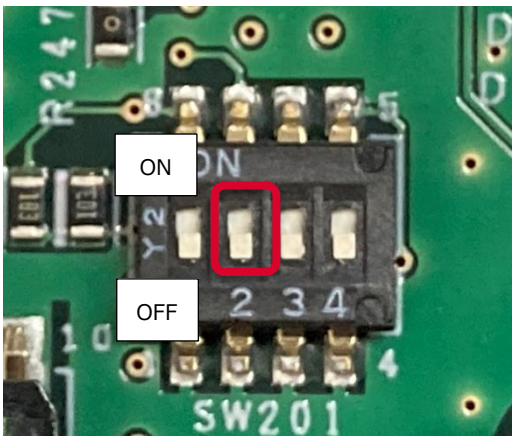

Figure 7. Slide switch

Table 5. Functions of Slide switch

Parts No.	No.	description
SW201	1	Reserved
	2	Switch to ON for Firmware update mode.
	3	Reserved
	4	Reserved

⑤USB communication

The main unit is powered and communicates with the PC via USB. Installing the driver is necessary for communication. Furthermore, by using the updater, the firmware of the matiseye™-adapter pro can be updated from the PC. For details, please refer to the updater manual.

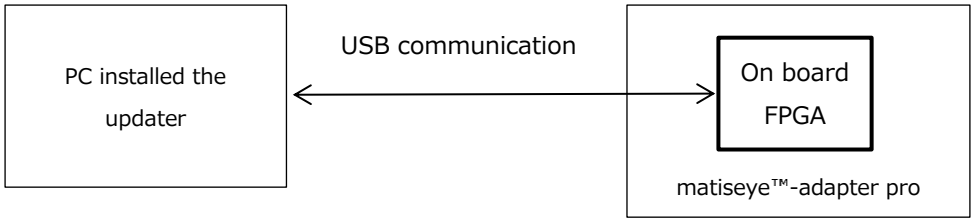

Figure 8. Firmware update overview

Procedure:

・Turn ON the slide switch No.2 on the matiseye™-adapter pro.

・Connect the USB cable.

・Launch the updater and update the software.

・Return the slide switch on the matiseye™-adapter pro to its original position.

3. Specifications

Item	Description
Power supply Voltage	5V (USB Bus power)
USB Terminal	Micro USB B Terminal
Debug I/F Terminal	2*5pin 1.27mm pitch
LED	1pcs (COM)
Matisse debug I/F maximum frequency	25MHz
Dimensions	6.5mm*28mm*66.5mm (W*H*D)
Weight	62g
Accessories	1.27mmpitch flat cable USB cable(Type-A/Micro-B)

4. References

For the information about the integrated development environment matiseye™-studio, please refer to the matiseye™-studio User's Guide."

5. Trademarks

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6. Initial Defects & Repairs

If this product is damaged or does not operate as specified in this user's guide before it is used, please return it to us within 30 days of receipt, and we will replace it free of charge if we determine that an exchange is necessary. Furthermore, if the product fails despite being used within the scope specified in this user's guide, we will repair or replace it free of charge within one year of receipt.

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