Universal Serial Bus Interface
External Floppy Disk Drive Unit

Slim-FBU

Model YD-8U10

Product Specification

Y-E DATA

FDUS-529009-01 REV. E

Product Revision	Date	Description
A	Apr. 08, 1999	First Edition
B	Jun. 17, 1999	Change the color of case and cable. Change the length of cable.
C	Dec. 08, 1999	Change the USB method (1.0→1.1) by the use of 1-chip. Unification to the International Sytem of Unit.
D	Jul. 11, 2000	Added to support Windows ME and Windows CE2.11.
E	Apr. 02, 2002	Added to support Windows XP, CE3.0 and Mac OS. Added to comments on restrictions of liability and high safety use.

Trademark Acknowledgment

USB is a abbreviation of Universal Serial Bus.
IBM®, PC-DOS are trademarks of International Business Machines Corporation.
MS-DOS and Windows are trademarks of Microsoft Corporation.
All other trademarks are property of their respective owners.

Disclaimer

While we have made a reasonable effort to ensure the accuracy of this document, Y-E DATA INC. shall not be held liable for any errors which may appear in this document. Y-E DATA reserves the right to change the information contained herein as needed without notice.

For the usage of this product for High Safety use

This product is assumed for general uses, such as an object for general office work, personal and home use, and is not designed or manufactured supposing for High safety use. Make sure not to use this product without taking measures to ensure the safety required for the high safety use.

High Safety Use means the use that requires extremely high security (see examples), and that accompanies a serious danger for the life and body directly, if security cannot be ensured.
*Nuclear control, airplane flight control, air traffic control, mass transportation operation control, life support, weapon launch control, etc.

This product specification is subject to change without notice.

Index

1. Introduction

Slim FB-U is USB I/F supported FDD with a built-in USB Controller Circuit in the FDD Circuit Board. It is miniaturized, light weight, and in particular thinmost(Thickness 17 mm) FDD product which is easier to carry about.

1) Standard USB Interface

Slim-FBU has the following standard USB interface and can be connected to a host and a hub compatible with USB.

- Include USB compatible protocol
- Response to standard USB operations such as configuration and reset
- Standard capability descriptive information

2) Hot Insertion Supported

Slim-FBU allows “hot insertion” on computers with drivers which support USB. That is, you can plug in and use Slim-FBU, or remove Slim-FBU from your computer, without rebooting or cycling the power of your computer.

3) Low Power Consumption

Slim-FBU is designed for very low power consumption. The power consumption is 1.25W operating and 2.5 mW suspended.

4) Handles 720 kB, 1.2 MB, and 1.44 MB Media Formats

For maximum data interchangeability, the Slim-FBU drive meets all of the requirements of 720 kB, 1.2 MB and 1.44 MB recording formats. Slim-FBU switches between 720 kB, 1.2 MB, and 1.44 MB media without any user intervention, rebooting, or power down of the unit.

5) Equivalent performance with Embedded FDD

Slim-FBU has 250/500 kbps data transfer rate. It is the same performance as the embedded FDD.

6) Support Windows and Mac OS

Slim-FBU is supported by the built-in driver of Windows XP, 2000, ME, and Mac OS 8.6 or later (9.0, 9.04, 9.1, 9.2, 10.1).

Y-E DATA prepare Slim-FBU driver for Windows 98, Windows CE2.11(H/PC Pro3.0) and 3.0.

Slim-FBU driver for Windows CE supported processor type of ARM, MIPS and SH4.

(NOTE)

- The host computer system cannot normally be booted from the Slim-FBU. If it is requested, changing the host computer’s BIOS can make it possible.
- Slim-FBU does not have its own power supply – its power is supplied via the USB cable.

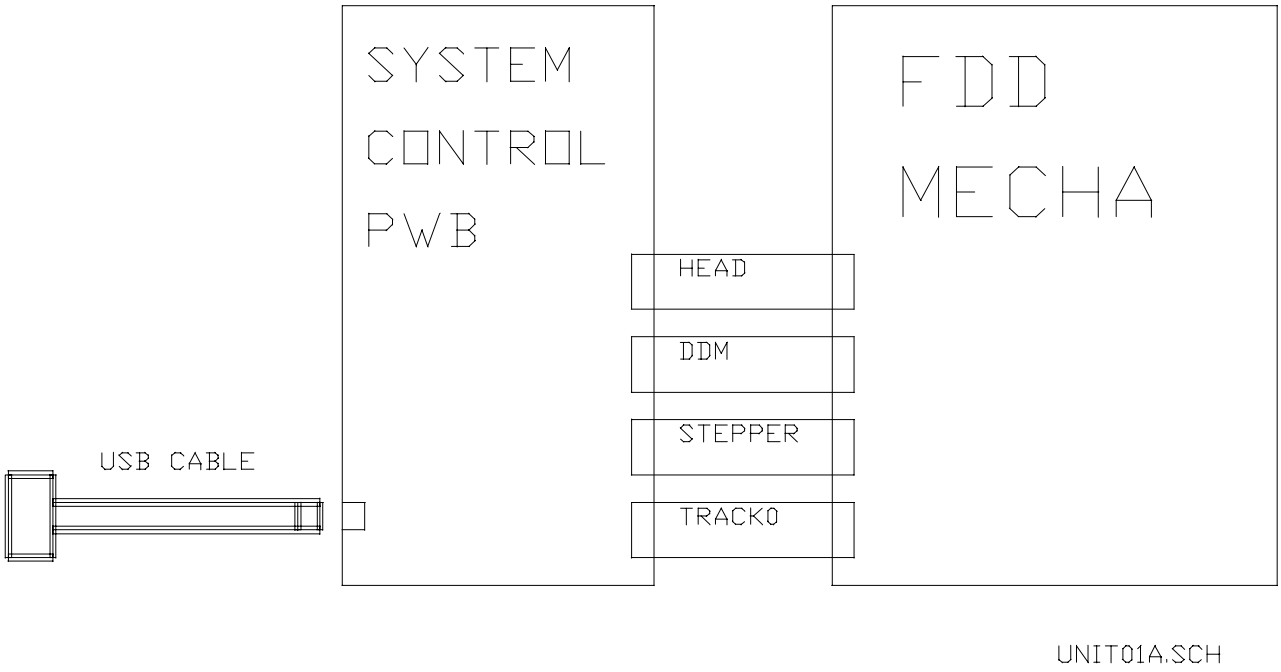
2. Configuration

Slim-FBU has the following components.

Item	Quantity
Slim-FBU	1
Driver Disk for Host PC	1

2.1 Block Diagram

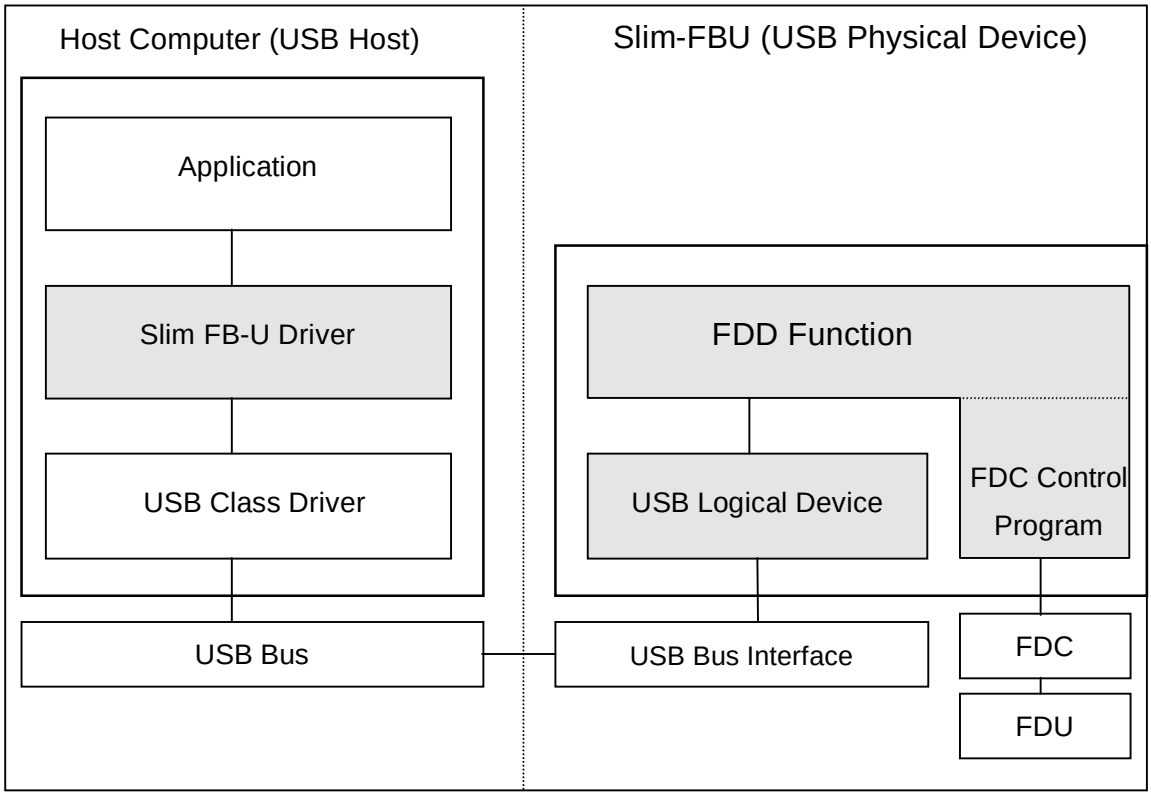
The following is the internal block diagram of the Slim-FBU



2.2 Driver Software

Host computer exchanges data with the Slim-FBU via the USB bus interface.

On Slim-FBU it has the program layers that communicates to the same host layers and the floppy disk control program. All of the device program runs under Microprocessor in Slim-FBU.



Note: ▭ is indicates dedicated software for Slim-FBU.

Slim-FBU Driver : This is Client software of USB Host, and this driver issue I/O request of Read/Write/Format/others to Slim-FBU.

USB Logical Device : This is USB logical device in USB Physical Device and it has functions of Control Endpoint, Bulk Input Endpoint, Bulk Output Endpoint and Interrupt Endpoint.

FDD Function : This is Function in USB Physical Device. It interprets the commands from Slim-FBU Driver and controls FDC Control Program.

FDC Control Program : It locates in Function in USB Physical Device, and it controls FDC and FDD under instructions of FDD Function.

3. Products Specifications

3.1 System Control Block

System control block has MICON, USB and FDC.

1) MICON

Architecture	16 bits Micro-controller

2) USB

Compatibility	USB spec Rev.1.1
Transfer Rate	FULL SPEED (12 Mbps)
Signal Level	>200 mV differential
Communication	Half duplex

3) FDC

Architecture	µPD72065B FDC compatible
Data Separator	Digital PLL

3.2 FDD Specification

FDD YD-8U10-xxFDxxxx (Y-E DATA)

3.5 FDD / 3 Mode

Color of LED Green

Media		2HD				2DD	
Unformatted Capacity		2.0 MB		1.6 MB		1.0 MB	
Formatted Capacity	Sector size	Capacity	Sectors /Track	Capacity	Sectors /Track	Capacity	Sectors /Track
	512 B	1440 kB	18	1200 kB	15	640 kB	8
	512 B	-	-	-	-	720 kB	9
	1024 B	-	-	1280 kB	8	-	-
Tracks		80		80		80	
Heads		2		2		2	
Encoding Method		MFM		MFM		MFM	
Rotational Speed (min^{-1})		300		360		300	
Transfer Rate (kbits/s)		500		500		250	
MTBF		30,000 hrs.					
Data Reliability	Hard Error Rate	Less than 1 in 10^{12} bits					
	Soft Error Rate	Less than 1 in 10^{9} bits					
	Seek Error Rate	Less than 1 in 10^{6} bits					

3.3 Cable Specification

Jacket Material	PVC
Color	Frozen White
Size of Cable	28 AWG
Mode	28 AWG one pair

3.4 Appearance

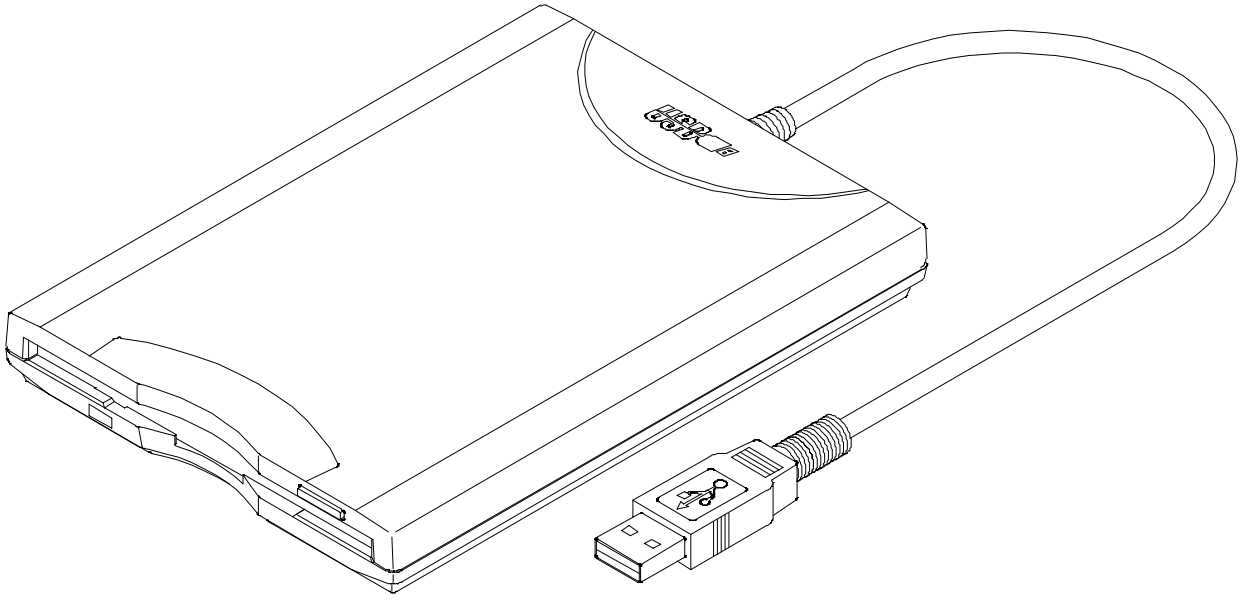
3.4.1 Case Specification

Color	Top side: DNP metallic(silver) / Bottom side: Blue gray
Case Material	ABS
Feet Material	CR Rubber

3.4.2 Mechanical Specification

Size(excluding protrusion)	103.5 mm(W) X 142.0 mm(D) X 17.0 mm(H)
Weight	280 g (TYP)

3.4.3 Drawing of Appearance

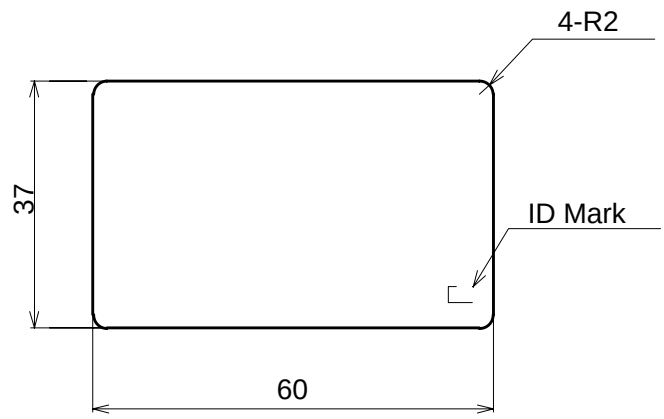


3.4.4 Drawing of Out line dimension

See attached the drawing Sheet.

3.4.5 Design of Label

Please specify the Slim-FBU label your company would like to use. (Or YED standard design.)



4. System Requirement

4.1 Power Requirement

Power Voltage (Vcc)	DC 4.40V to 5.25V

		TYP	MAX
Power Supply Current	Suspend	---	500 uA
	Stand By	80 mA	130 mA
	Read	250 mA	300 mA
	Write	250 mA	300 mA
	Motor Start	450 mA	500 mA
	Seek	370 mA	500 mA

Note: Test Condition

Vcc=DC5.0 V,DISK:the general disk

4.2 Environment Requirement

		Operating	Non-Operating
Environment	Temperature	5 ~ 40 °C	-40 ~ 60 °C
	Humidity	30~ 80 %RH	No dewing
	Max wet bulb	29 °C	--------
	Vibration Sweep Time : 5.6minute Test Time : 10minute(1direction) Direction of Sweep:XYY'	9.8m/s^2 (10~200 Hz) 4.9m/s^2 (200 ~ 500 Hz)	19.6m/s^2 (10 ~ 500 Hz)
	Shock Direction of Shock:XYY' 20 times each direction	49 m/s^2(11ms Half Sine)	980m/s^2(11ms Half Sine)
	Electrostatic Discharge	IEC pub.1000-4-2 Level 4 compliant	

Regulations	UL, cUL, TÜV,CE, FCC-classB, VCCI-classB

5. Package

TBD