



OEM PRODUCT SPECIFICATION

PRODUCT NAME: IDE-SCSI Converter

PART NUMBER: IDSC21-E

PRODUCT DESCRIPTION: IDE-SCSI Conversion Adapter
(20 MG/S Version) using
Himawari IDE-SCSI
Conversion IC

This manual and its appendices consist of a total of 11 pages.
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Revision History

Version No.	Revision Date	Description	Checked by	In charge
1.0	03/30/1999	NEW DOCUMENT		
1.0E	09/23/1999	ENGLISH VERSION OF SPEC		
2.0	10/26/00	UPDATE PRODUCT SPEC		
2.0E	10/27/00	ENGLISH VERSION OF SPEC		
2.1E	2/7/02	Detail Update		

 caution	<p>This product is not intended for use as a medical appliance, nuclear power equipment or apparatus, aerospace apparatus, equipment or apparatus related to human life such as transport equipment or apparatus, or equipment or apparatus requiring a high level of reliability, nor is it intended for use in combination with this kind of equipment or apparatus. In cases where this product is used in conjunction with such equipment or apparatus, or in a control system, I-O Data Device, Inc. assumes no responsibility for personal injury, fire, social harm, or other damage that occurs due to trouble with this product. For this kind of equipment, apparatus, or control system, be sure to take extra precautions regarding safety plans such as redundant design, plans to prevent the spread of fire, and plans for preventing improper operation.</p>
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1. APPLICATION

This manual applies to the IDSC21-E IDE-SCSI Converter.

2. PRODUCT OVERVIEW

- ✎ Converts the device interface IDE (ATA/ATAPI) to SCSI bus
- ✎ Supports asynchronous mode and 20M, 10M, and 5M bytes/sec synchronous mode data transfers for SCSI bus
- ✎ Supports PIO modes 0 to 4 for ATA bus and DMA 0 to 2 for multiword
- ✎ Equipped with I-O Data Device's IDE-SCSI conversion IC (model name: I•O98064), the hardware can simultaneously control SCSI and IDE transfers by using a 16-byte FIFO data buffer eliminating idle and wasted time so that ATA/ATAPI device speeds can be directly achieved.
- ✎ The SCSI bus REQ signal output system employs I-O Data Device's SCSI-IDE converter IC (model name: I-O98064) open drain buffers and low noise 3-state buffers, and can be configured using a short-circuit socket (jumper).

3. PRODUCT SPECIFICATIONS

- 1) Product Name IDE-SCSI Converter
- 2) Part Number IDSC21-E
- 3) External Dimensions 126.31 mm (W) ? 34.75 mm (D) ? 22.49 mm (H)
- 4) Weight Approximately 35 g (board only)
- 5) Electrical Specifications

Input power source: +5V DC ? 5%

Power consumption: 130 mA (max: 360 mA)
**Not including SCSI signal external TERMPWR output*

Ripple: +5V 100mVp-p

Electrical input sequence: Converter and IDE device must have same power source and must start up at the same time

- 6) Usage Environment 5? to 55?C, 20 to 80% RH (no condensation)

- 7) Storage Environment -20? to 65?C, 5 to 95% RH (no condensation)

- 8) SCSI Interface

ANSI SCSI-2 (X3.131-1986) and ANSI SCSI-3 FAST-20 (X3T10/1071D) compliant

Transfer modes	Supports asynchronous and 20M, 10M, and 5M bytes/sec synchronous
Maximum transfer speeds	20M, 10M, 5M, and 6.7M bytes/sec (synchronous) and 20M, 10M, and 5M bytes/sec (asynchronous)
Bus type	Single-ended
Bus width	8 bits
Parity function	Available
Available offset values	1 to 16
Available SCSI IDs	0 to 7
External TERMPWR output	Available
Connector	MIL type, 2.54 mm pitch, 2-row 50-pin box type plug
Signal output (not REQ)	Open drain
Signal output (only REQ)	Open drain/3-State (set by jumper)

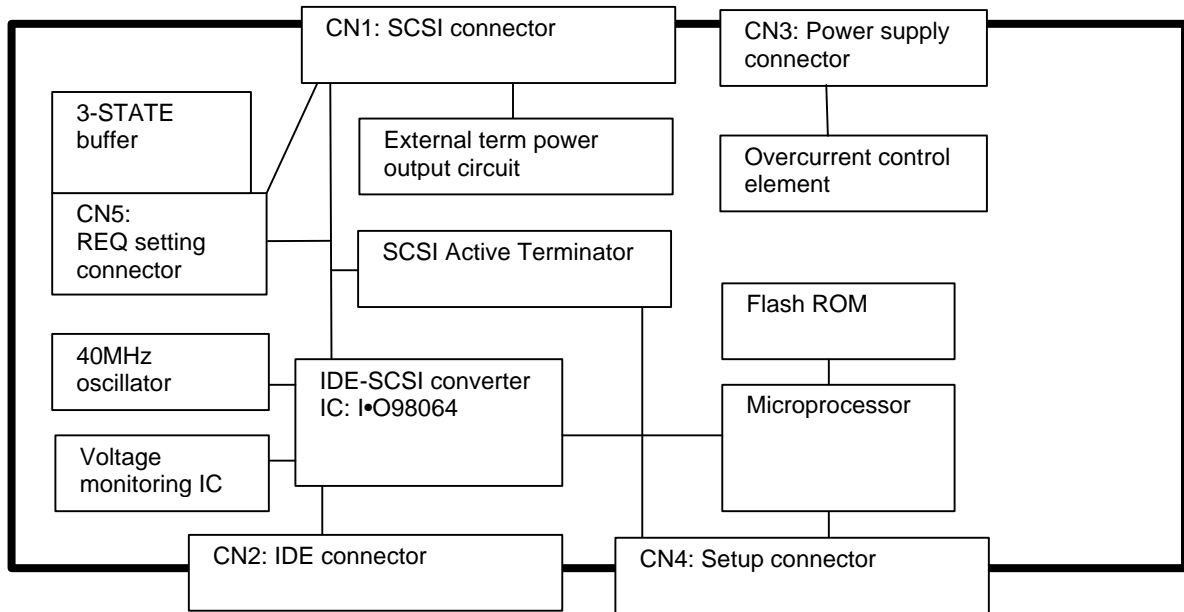
9) IDE Interface

ANSI ATA-3 (X3T10/2008D) compliant

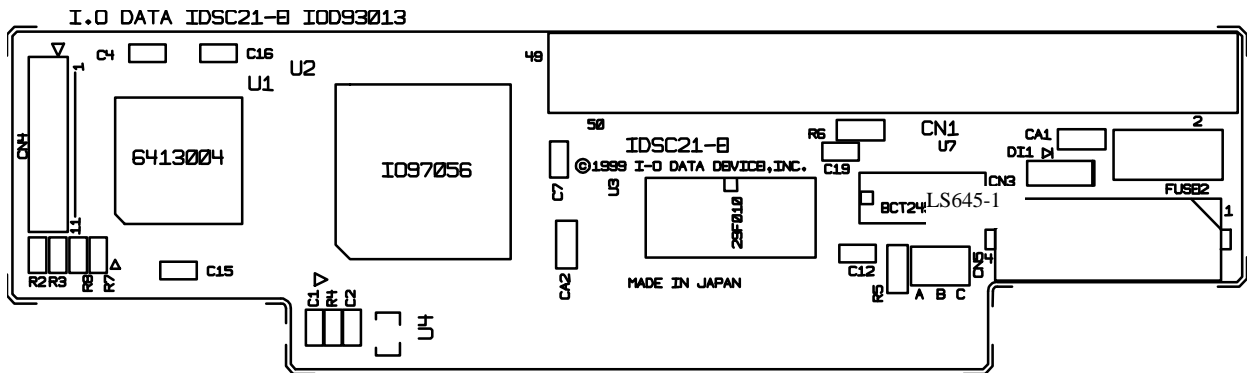
Transfer modes	PIO 4 to 0, Multiword DMA 2 to 0
Maximum transfer speeds	16M, 10M, 8M, 5M, and 3.2M bytes/sec (PIO modes 4, 3, 2, 1, and 0), 16M bytes/sec (DMA 2)
Bus width	16 bits
Connector	MIL type, 2.54 mm pitch, 2-row 40-pin socket (with 60mm 40-pin flat cable)

4. INTERNAL BLOCK DIAGRAM

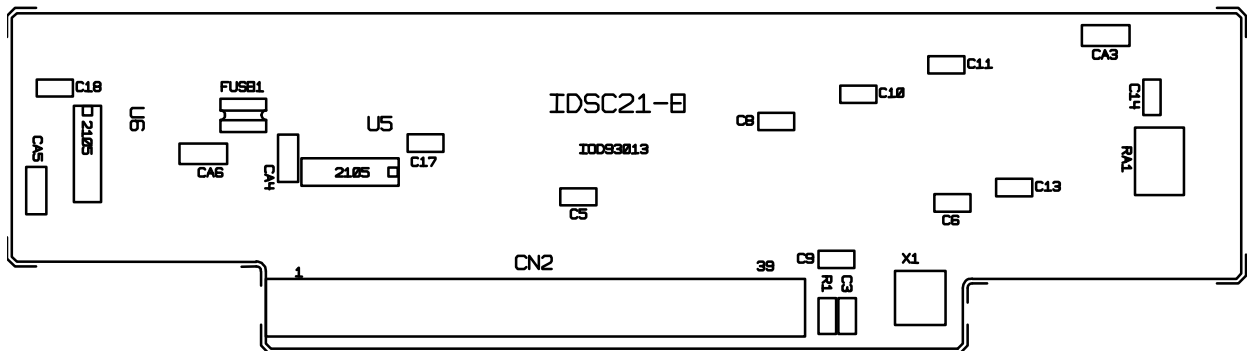
(Only major parts are shown)



5. BOARD SILKSCREEN DIAGRAMS



SILK UPPER

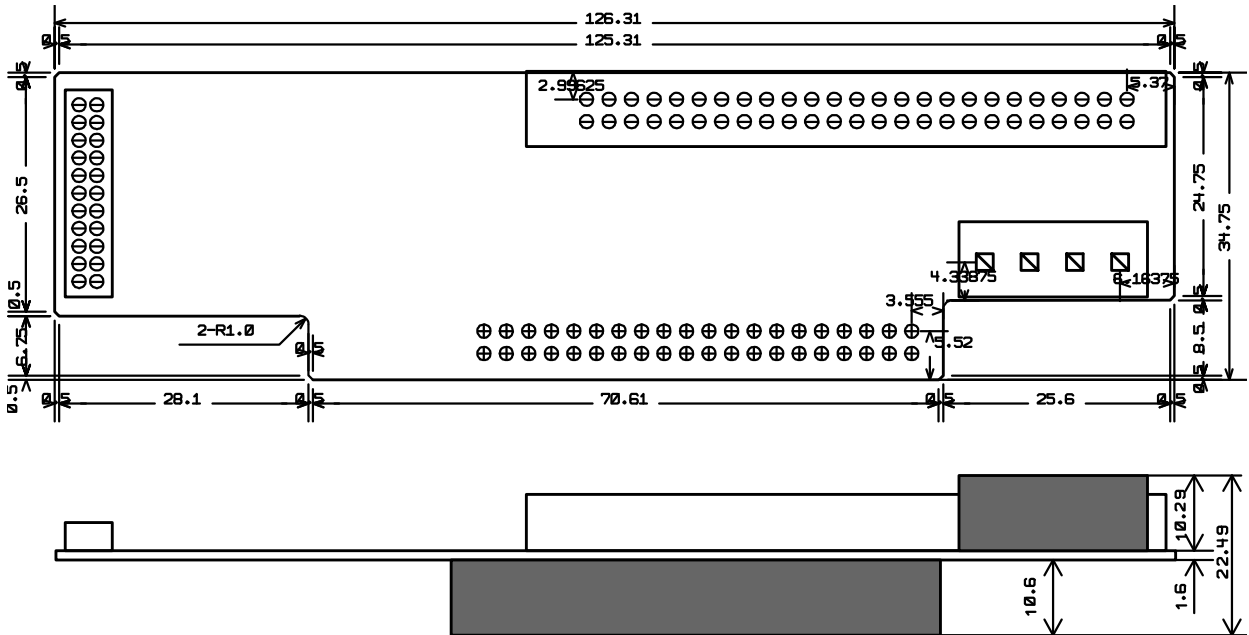


SILK LOWER

*Please note that the following errors exist in the product silkscreens:

1. DI1 diode polarity mark
2. CN-4 Setup connector 1-11; 9 is correct

6. EXTERNAL DIMENSIONS



7. CONNECTION CONDITIONS

1) Table of Connector Signals

1. SCSI connector (CN1)

- 1:GND
- 2:-DB0
- 3:GND
- 4:-DB1
- 5:GND
- 6:-DB2
- 7:GND
- 8:-DB3
- 9:GND
- 10:-DB4
- 11:GND
- 12:-DB5
- 13:GND
- 14:-DB6
- 15:GND
- 16:-DB7
- 17:GND
- 18:-DBP
- 19:GND
- 20:GND
- 21:GND
- 22:GND
- 23:(Open)
- 24:(Open)
- 25:(Open)
- 26:TERMPWR
- 27:(Open)
- 28:(Open)
- 29:GND
- 30:GND
- 31:GND
- 32:-ATN
- 33:GND
- 34:GND
- 35:GND
- 36:-BSY
- 37:GND
- 38:-ACK
- 39:GND
- 40:-RST
- 41:GND
- 42:-MSG
- 43:GND
- 44:-SEL
- 45:GND
- 46:-C/D
- 47:GND
- 48:-REQ
- 49:GND
- 50:-I/O

2. IDE connector (CN2A)

- 1:-RESET
- 2:GND
- 3:DB7
- 4:DB8
- 5:DB6
- 6:DB9
- 7:DB5
- 8:DB10
- 9:DB4
- 10:DB11
- 11:DB3
- 12:DB12
- 13:DB2
- 14:DB13
- 15:DB1
- 16:DB14
- 17:DB0
- 18:DB15
- 19:GND
- 20:(Open)
- 21:DMARQ
- 22:GND
- 23:-DIOW
- 24:-GND
- 25:-DIOR
- 26:-GND
- 27:IORDY
- 28:GND (CSEL)
- 29:-DMACK
- 30:GND
- 31:INTRQ
- 32:(Open)
- 33:DA1
- 34:(Open)
- 35:DA0
- 36:DA2
- 37:CSIFX
- 38:-CS3FX
- 39:-DASP
- 40:GND

3. Power supply connector (CN3)

1: (Open) 2: (Open) 3: GND 4: +5V

4. Setup connector (CN4 = JP 1 to 11) For settings table, see next section.

1:ID0	2:GND	SW1	}	For SW1 to SW9 setup table, see next section
3:ID1	4:GND	SW2		
5:ID2	6:GND	SW3		
7:MOD0	8:GND	SW4		
9:MOD1	10:GND	SW5		
11:MOD2	12:GND	SW6		
13:MOD3	14:GND	SW7		
15:MOD4	16:GND	SW8		
17:TERMPD	18:GND	SW9		

**The characters 1 - 11 silk-screened on the board should read 1 - 9 instead*

5. REQ Buffer setup connector (CN5)

SW No.	A	B	C	REQ buffer
	1	0	0	Open drain
	0	1	1	3-State v (Setting when shipped)

**0 means the short-circuit socket is not inserted. 1 means it is inserted.*

2) Setup Connector (CN4 = SW1 to SW9) Setting Tables

SCSI-ID switches

SW No.	1	2	3	4	5	6	7	8	9	SCSI ID
	0	0	0							ID 0 (setting when shipped)
	1	0	0							ID 1
	0	1	0							ID 2
	1	1	0							ID 3
	0	0	1							ID 4
	1	0	1							ID 5
	0	1	1							ID 6
	1	1	1							ID 7

SCSI1/2 mode when an ATA device is used

SW No.	1	2	3	4	5	6	7	8	9	SCSI-1/2 mode
				0	1	0				SCSI-2
				1	1	0				SCSI-1

ATA transfer mode when an ATA device is used

SW No.	1	2	3	4	5	6	7	8	9	ATA transfer mode
							0			PIO transfer
							1			DMA transfer

ATAPI device type when an ATAPI device is used

SW No.	1	2	3	4	5	6	7	8	9	ATAPI device type
				0	0	0	0			Normal (CD-ROM, etc.) (Setting when shipped)
				0	0	1	0			CD-changer (LUN 0 to 5)
				0	0	0	1			PD
				0	0	1	1			LS-120

Flash ROM

SW No.	1	2	3	4	5	6	7	8	9	Flash ROM
								0		Normal mode (Setting when shipped)
								1		Rewrite mode

Terminator switch

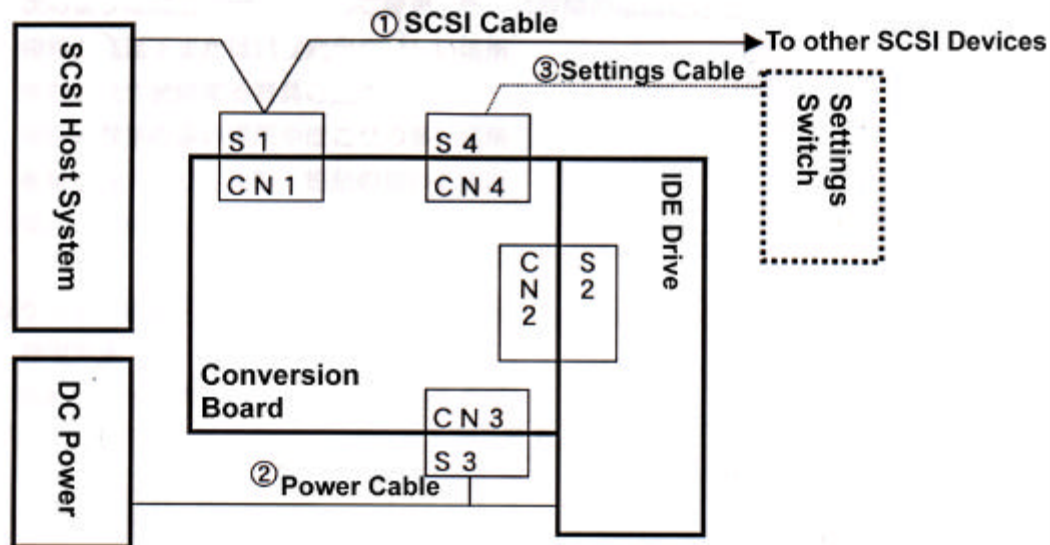
SW No.	1	2	3	4	5	6	7	8	9	Internal SCSI terminator switch
									0	Terminator switch On (Setting when shipped)
									1	Terminator switch Off

*0 = jumper not inserted. 1 = jumper inserted.

*JPX is released/short-circuit to GND

3) Cable Connection Conditions

The figure below shows the cable connections between the converter, host system, and power supply unit, and the parts used to make each connection.



- ① SCSI cable
- ② Power supply cable
- ③ Setup cable (optional, when jumper is not used)

CN1: SCSI connector
 CN2: IDE connector
 CN3: Power supply connector
 CN4: Setup connector

Recommended Parts for Connection

Symbol	Name	Model Ratings	Notes
S1	SCSI connector	2.54mm pitch, 50 pins, receptacle	
S2	IDE connector	2.54mm pitch, 40 pins, plug	
S3	Power connector	Commercial [MEITEN] lock connector, 4-pole housing	
S4	Shorting socket for settings	2.0mm pitch x number of settings (0 to 9)	*1,2
S5	Settings cable socket	2.0mm pitch, required number of poles (2 to 18)	*2

* 1. Sometimes attached to one product.

* 2. Either one is selected.

8. SCOPE OF QUALITY ASSURANCE

(1) Installation evaluation and confirmation

These product specifications guarantee the quality of the product as a unit.

Be sure to evaluate and confirm the state of your company's product when it is used with this device.

(2) Problems due to use contrary to stipulated specifications

I-O Data Device, Inc. cannot guarantee against problems that occur due to use of this product in a manner that deviates from stipulations appearing in these product specifications.

(3) Secondary damage

I-O Data cannot be responsible for secondary damage that occurs during the use of this product, even if the product is used according to the usage conditions that appear in these specifications.

(4) Limited Warranty

If an operation failure or other problem that hinders the practical use of this product occurs due to some cause that originated during manufacturing while the product is used according to the usage conditions that appear in these specifications, this product will be replaced with a new product. I-O Data cannot be responsible for failure or other problems that occur outside these conditions.

(5) Others

If any problem related to matters not appearing in these specifications occurs, it will be resolved based on good-faith meetings by both companies.

9. MODIFICATIONS TO SPECIFICATION

Should the customer require modifications related to these specifications, changes will be made based on meetings and the mutual consent of both companies. NRE charges may apply at the discretion of I-O Data for the customization of hardware configurations, firmware, and/or software.

10. RETURN OF SPECIFICATIONS

After receipt and confirmation of these specifications, please sign in the box entitled *Received By* in these specifications and return a photocopy of page 1 to I-O Data Device, Inc.