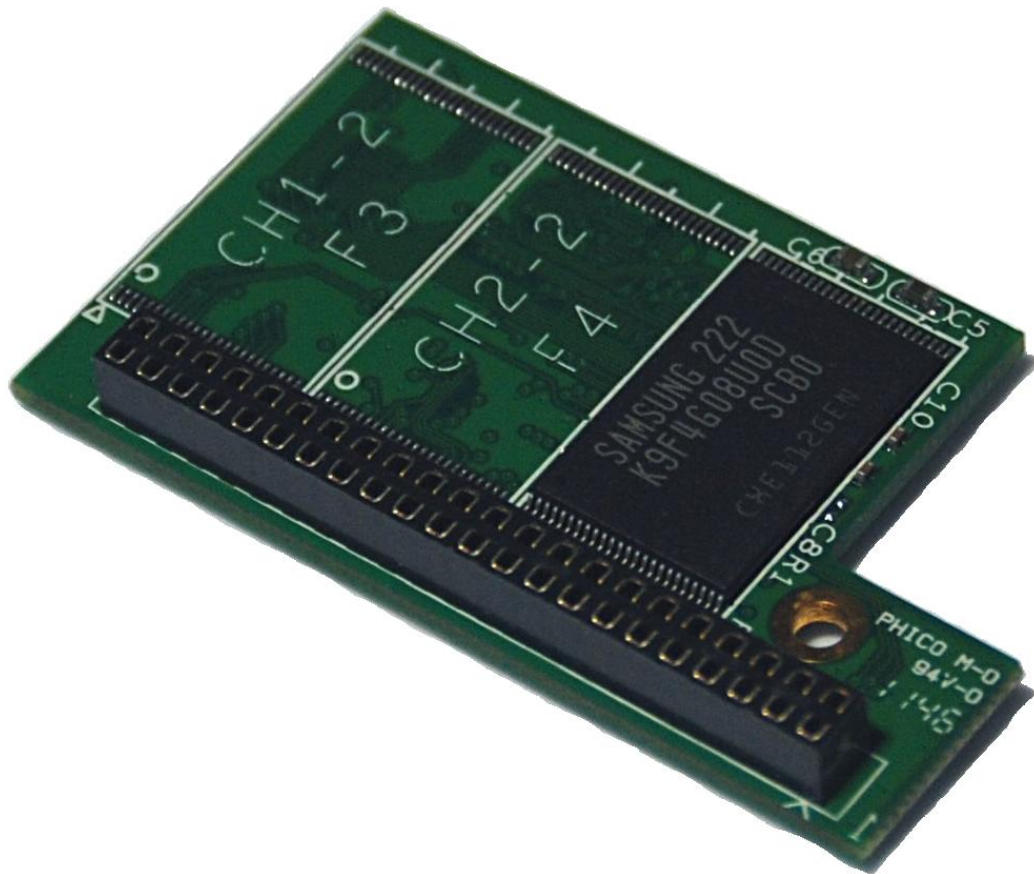


# » Kontron User's Guide «



**chipDISK/1000-IDE**

**KTD-S0050-C**

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# 1 User Information

## 1.1 About This Document

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Life support devices or systems are devices or systems which

- a) are intended for surgical implant into body or
- b) support or sustain life and whose failure to perform, when properly used in accordance with instructions for use provided in the labelling, can be reasonably expected to result in significant injury to the user.

A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

## 1.7 Technical Support

Please consult our web site at <http://www.kontron.com/support> for the latest product documentation, utilities, drivers and [support contacts](#) or use the special e-mail address [sbc-support@kontron.com](mailto:sbc-support@kontron.com) for a technical problem. In any case you can always contact your board supplier for technical support.

Before contacting support please be prepared to provide as much information as possible:

### Carrier-Board identification:

- Type
- Part number (find PN on label)
- Serial number (find SN on label)

### Carrier-Board configuration:

- BIOS revision (find in the BIOS Setup)
- BIOS settings different than default settings (refer to the BIOS Setup section)

## 2 Introduction

The chipDISK/1000-IDE provides high-capacity, solid-state Flash memory and is electrically compatible with IDE disk drives. The chipDISK/1000-IDE modules are available with 1GB of unformatted storage capacity.

It comes with a 44-pin, 2mm IDE connector onboard and therefore perfectly fits onto most PC/104 family products. However it also can be used on all other modules of any manufacturer on the market that provide an IDE compatible hard disk interface.

A special mounting hole on its PCB can provide a way of secure assembly to the system it is used on.

As the chipDISK/1000-IDE operates in true-IDE mode there is no need for special operating system drivers, which is a big advantage against other Flash based solid-state disks on the market.

## 3 Specifications

### 3.1 Functional Specifications

The chipDISK/1000-IDE hard disk incorporates the following features:

- True IDE hardware-compatible disk
- Based on NAND Flash technology
- Very low-power CMOS operation and ultra-low-power (ULP) standby modes
- 5V single power supply operation
- Automatic error correction and retry
- Supports auto standby commands and sleep modes
- Support transfer mode PIO (0-4)
- MTBF 3000000 hours
- Space saving design optimized for MOPS family products
- Low weight
- Noiseless operation

### 3.2 Mechanical Specifications

#### Dimensions

- Ext. Dimensions: 31 x 52.5mm (1.22" x 2.07")
- Height: 7mm (0.28")
- Weight: < 10g

### 3.3 Electrical Specifications

#### Supply Voltage

- 5V DC +/- 5%

#### Supply Current (typical)

- Sleep Mode <sup>1)</sup>: < 1.4mA @ 5V
  - Reading: < 140mA @ 5V
  - Writing: < 140mA @ 5V
- 
-

## 3.4 Environmental Specifications

### Temperature

Operating:

- Ambient temperature: 0 to +60°C <sup>1)</sup>

Non operating:

- Ambient temperature: -10 to +85°C

### Humidity

- Operating: 10% to 90% (non condensing)
- Non operating: 5% to 95% (non condensing)

## 3.5 Geometry

Capacity (MB)	Cylinders	Heads	Sectors
985,36	2002	16	32

## 3.6 MTBF

The following MTBF (Mean Time Between Failure) values were calculated using a combination of manufacturer's test data, if the data was available, and a Bellcore calculation for the remaining parts. The Bellcore calculation used is 'method 1 case 1'. In that particular method the components are assumed to be operating at a 50% stress level in a 40°C ambient environment and the system is assumed to have not been burned in. Manufacturer's data has been used wherever possible. The manufacturer's data, when used, is specified at 50°C, so in that sense the following results are slightly conservative. The MTBF values shown below are for a 40°C in an office or telecommunications environment. Higher temperatures and other environmental stresses (extreme altitude, vibration, salt water exposure, etc.) cause lower MTBF values.

- System MTBF (hours): 3000000 @ Condition Telcordia SR-332 GB, 25°C

## 4 Chipset

The Flash ChipSet (FCS) on chipDISK/1000-IDE consists of two parts:

- One highly integrated Flash controller
- Four Flash memory modules

### 4.1 Flash Controller

The Flash controller provides a true Integrated Drive Electronics (IDE) compatible interface to the host computer. The controller manages:

- Interfacing to the host system
- Storing data
- Retrieving data
- Error checking and correcting (ECC) memory
- Handling defects
- Diagnosing
- Managing power

The controller manages all defects and errors and makes the Flash memory appear as perfect memory to the host. After the chipDISK/1000-IDE has been configured by the host, it appears to the host as a standard IDE disk drive with transfer mode up to PIO 4.

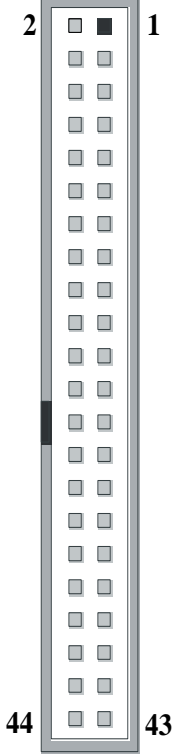


## 5 IDE Interface

The chipDISK/1000-IDE comes with a 44 pin, 2mm female IDE interface connector. That way it is possible to directly assemble it with a product of the PC/104 MOPS family. However it can also be used with other products offering an IDE interface, either directly or with an adapter available by Kontron (chipDISKADA1, part number 96004-0000-00-0).

### 5.1 Connector

The following table provides information about the IDE interface connector pinout.

Header	Pin	Signal Name	Function	Pin	Signal Name	Function
	1	<b>/RESET</b>	Reset	2	<b>GND</b>	Ground
	3	<b>D7</b>	Data 7	4	<b>D8</b>	Data 8
	5	<b>D6</b>	Data 6	6	<b>D9</b>	Data 9
	7	<b>D5</b>	Data 5	8	<b>D10</b>	Data 10
	9	<b>D4</b>	Data 4	10	<b>D11</b>	Data 11
	11	<b>D3</b>	Data 3	12	<b>D12</b>	Data 12
	13	<b>D2</b>	Data 2	14	<b>D13</b>	Data 13
	15	<b>D1</b>	Data 1	16	<b>D14</b>	Data 14
	17	<b>D0</b>	Data 0	18	<b>D15</b>	Data 15
	19	<b>GND</b>	Ground	20	<b>Key (N.C.)</b>	Key pin
	21	<b>DRQ</b>	DMA Request	22	<b>GND</b>	Ground
	23	<b>/IOW</b>	I/O write	24	<b>GND</b>	Ground
	25	<b>/IOR</b>	I/O read	26	<b>GND</b>	Ground
	27	<b>IOCHRDY</b>	I/O channel ready	28	<b>CSEL</b>	Master/Slave Select
	29	<b>/DACK</b>	DMA Acknowledge	30	<b>GND</b>	Ground
	31	<b>IRQ</b>	Interrupt request	32	<b>/IOCS16</b>	16bit I/O
	33	<b>SA1</b>	Address 1	34	<b>/PDIAG</b>	Passed Diag.
	35	<b>SA0</b>	Address 0	36	<b>SA2</b>	Address 2
	37	<b>/CS0</b>	Chip select 0	38	<b>/CS1</b>	Chip select 1
	39	<b>/DASP</b>	Device active	40	<b>GND</b>	Ground
	41	<b>VCC<sup>1)</sup></b>	Power +5V	42	<b>VCC<sup>1)</sup></b>	Power +5V
	43	<b>GND</b>	Ground	44	<b>N.C.</b>	Not connected

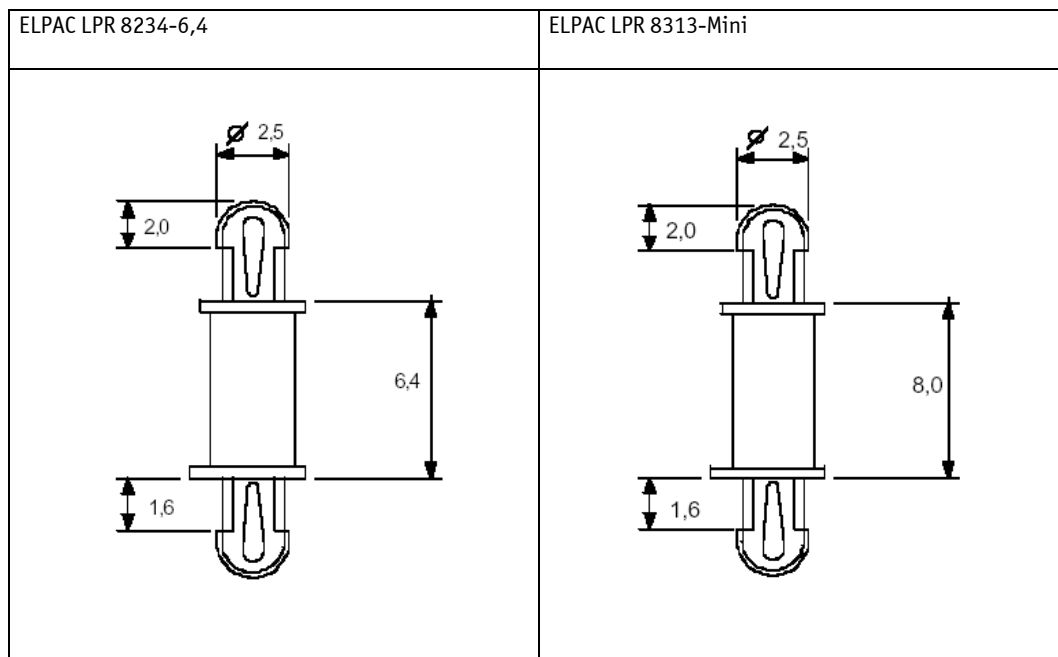
## 5.2 Configuration

The chipDISK/1000-IDE is by hardware configured as a master. It cannot be configured as a slave by the customer. Therefore an additional devices connected to the same IDE channel has to be configured as slave.

## 6 Mounting Hole

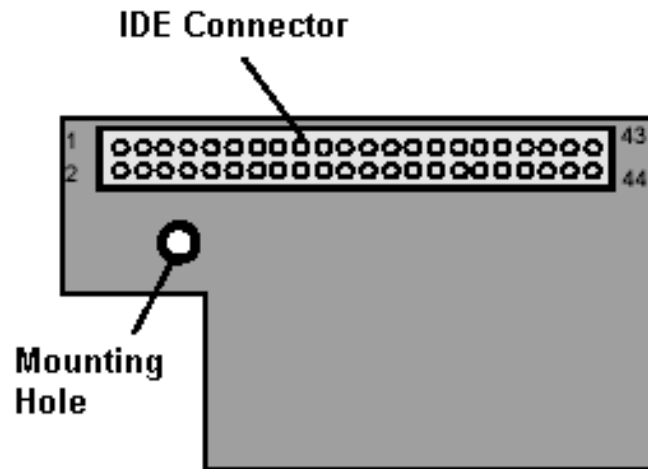
The Printed Circuit Board (PCB) of the chipDISK/1000-IDE is equipped with a mounting hole. This hole can be used to fix the chipDISK to the carrier board. Products of the PC/104 MOPS family also offer a hole as counterpart. That way the chipDISK can be secured against fall off caused by vibration. You can use either a mini-spacer or other suitable mounting parts.

The diameter of the chipDISK hole is 2.6mm (0.103"). If you are using metal screws and bolts, make sure that they don't exceed the tin-plated area around the hole. We recommend to use a plastic mini-spacer (e.g. ELPAC LPR 8234-6,4 or LPR 8313-Mini). The height of the mini-spacer or bolts is depending on the IDE-connector used on the carrier board, which is normally either 6mm (0.236") or 7.64mm (0.3"). About 0.4mm have to be added when the chipDISK is plugged.

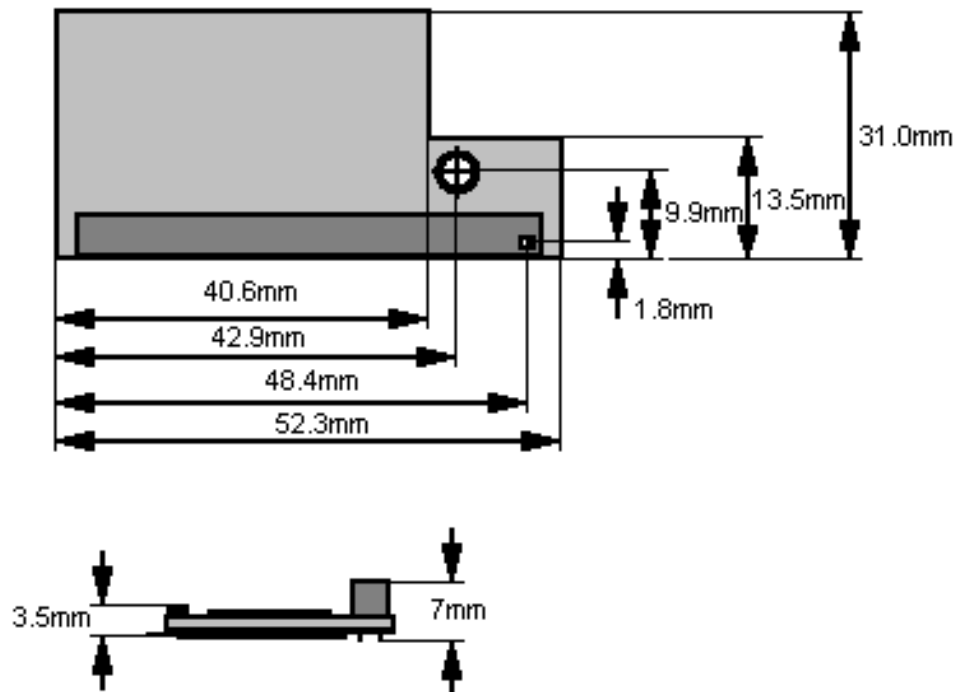


All dimensions in the above drawings in mm.

## Appendix A: Mechanical Dimensions



### View from connector side



## Appendix B: Document Revision History

Revision	Date	Author	Changes
S0050-C	Mar 18, 2013	M. Müller	Updated info in Functional Specifications and Geometry
S0050-B	Oct 01, 2012	M. Müller	Added cover photo
S0050-A	Aug 15, 2012	M. Hüttmann	Updated manual design
S0050-0	Aug 07, 2012	M. Müller	Created preliminary manual

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