

# Titans series

INDUSTRIAL

Micro IDE Flash (MIF) disk

A PRO of Industrial Flash Memory Storage

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Preliminary spec. sheet (081209-V2.1)



Compatibility :



Supported O.S. :



Certification :



INDUSTRIAL  
CompactFlash Card

INDUSTRIAL  
PCMCIA ATA Card

INDUSTRIAL  
micro IDE Flash Disk

INDUSTRIAL  
Solid State Disk

INDUSTRIAL  
micro SATA Flash Disk

INDUSTRIAL  
Rugged USB Disk

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Operating temperature supports optionally  
Standard grade 0°C ~ 70°C and Industrial grade -40°C ~ 85°C

## Features:

- Standard 40/44-pin female IDE connector
- Compact form-factor in vertical type and horizontal type
- Comply with ATA/ATAPI-5 specification
- Data transfer mode supports PIO 0~4 and UDMA 0~4
- Options for standard grade and industrial grade
- Master / Slave selectable
- Write Protection Device by switch
- Performance up to 25.9 MB/sec
- Disk capacity from 32MB to 4GB



## Specifications:

◆ <b>Compatibility</b>	ATA/ATAPI-5 and True IDE mode
◆ <b>Flash technology</b>	SLC-NAND type flash based
◆ <b>Form-factor</b>	Compact-design in horizontal rightward and leftward types
◆ <b>Host Interface</b>	40-pins/44-pins female IDE interface
◆ <b>Master / Slave setting</b>	By switch
◆ <b>Write Protection Device</b>	By switch
◆ <b>LED Indicators</b>	Blue: Power on ; Red: Operating
◆ <b>Performance</b>	
● <b>Data transfer mode</b>	PIO-4 mode or UDMA-4 mode (Default setting)
● <b>Data transfer rate</b>	66.6MB/sec under UDMA-4 mode 16.6MB/sec under PIO-4 mode
● <b>Sequential read</b>	25.9 MB/sec (Max. /with dual flash / 100MB file test)
● <b>Sequential write</b>	11.9 MB/sec (Max. /with dual flash / 100MB file test)
● <b>Average access time</b>	0.7ms (estimated)
◆ <b>Environmental specification</b>	
● <b>Operating temperature</b>	Standard grade 0°C ~ 70°C / Industrial Grade -40°C ~ 85°C
● <b>Non-operating temperature</b>	Standard grade -20°C ~ 80°C / Industrial Grade -50°C ~ 95°C
● <b>Humidity</b>	10% ~ 95% non-condensing
● <b>Vibration</b>	20G compliance to MIL-STD-810F
● <b>Shock</b>	1,500G compliance to MIL-STD-810F

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## ◆ Power consumption

- Power requirement +5V ± 10%
- Reading mode 93.0mA(Max.)
- Writing mode 94.6mA(Max.)
- Sleeping mode 59.5mA(Max.)

## ◆ Reliability

- Wear-leveling Dynamic wear-leveling algorithms
- MTBF > 1,000,000 hours
- ECC Enhanced management 4-bits per 512bytes block
- Endurance > 2,000,000 cycles logically contributed by dynamic wear-leveling and advanced bad sector management algorithms
- Data reliability < 1 non-recoverable error in 10<sup>14</sup> bits read
- Data retention 10 years

## ◆ Physical specification

- Weight (max.)/g (oz)
  - 40-pin/44-pin vertical type : 20g(0.7oz) / 15g(0.53oz)
  - 40-pin/44-pin horizontal type : 15g(0.53oz) / 10g(0.35oz)
- Dimension(W x L x H)/mm
  - 40-pin vertical type : 57.00 x 28.60 x 10.20
  - 40-pin horizontal type: 51.85 x 26.50 x 8.70
  - 44-pin vertical type : 49.95 x 27.35 x 9.9
  - 44-pin horizontal type: 45.05 x 27.00 x 5.75

## ◆ Warranty

- Standard grade 3 years
- Industrial grade 5 years

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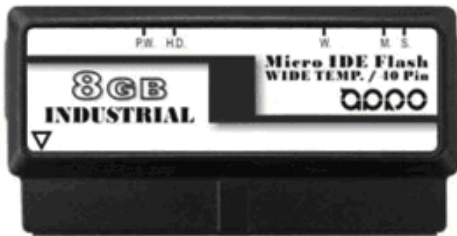


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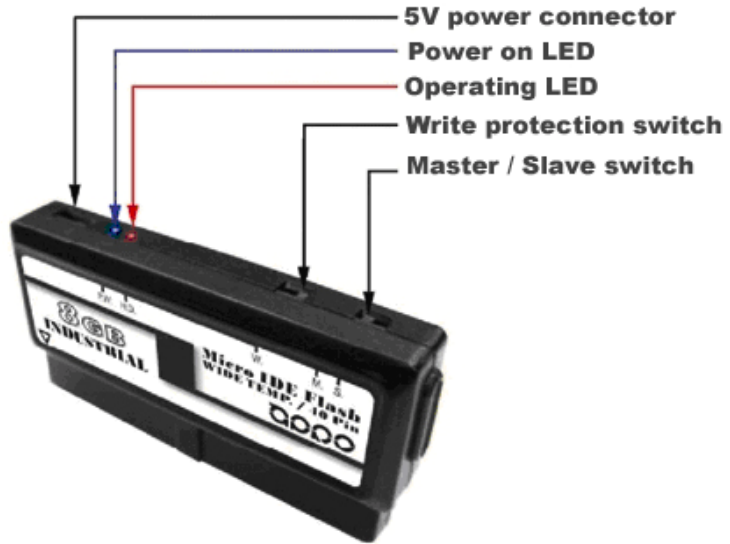
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## Appearance features:



40-pin V-Type Front Side



40-pin V-Type Front Side

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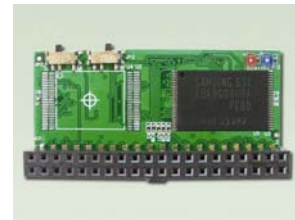
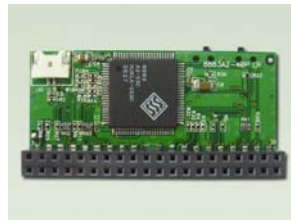
## Part number list - IDE 40-pin standard grade :

40-pin micro IDE flash disk Form-factor

40-pin Vertical type

40-pin Horizontal-rightward

40-pin Horizontal-leftward



Operating temperature supports 0°C ~ 70°C

Capacity	Form-factor	PIO-4 mode	UDMA-4 mode
32MB	Vertical	SPMIF032M-SECSC-0V-P	SPMIF032M-SECSC-0V-U
	Right	SBMIF032M-SECSC-0R-P	SBMIF032M-SECSC-0R-U
	Left	SBMIF032M-SECSC-0L-P	SBMIF032M-SECSC-0L-U
64MB	Vertical	SPMIF064M-SECSC-0V-P	SPMIF064M-SECSC-0V-U
	Right	SBMIF064M-SECSC-0R-P	SBMIF064M-SECSC-0R-U
	Left	SBMIF064M-SECSC-0L-P	SBMIF064M-SECSC-0L-U
128MB	Vertical	SPMIF128M-SECSC-0V-P	SPMIF128M-SECSC-0V-U
	Right	SBMIF128M-SECSC-0R-P	SBMIF128M-SECSC-0R-U
	Left	SBMIF128M-SECSC-0L-P	SBMIF128M-SECSC-0L-U
256MB	Vertical	SPMIF256M-SECSC-0V-P	SPMIF256M-SECSC-0V-U
	Right	SBMIF256M-SECSC-0R-P	SBMIF256M-SECSC-0R-U
	Left	SBMIF256M-SECSC-0L-P	SBMIF256M-SECSC-0L-U
512MB	Vertical	SPMIF512M-SECSC-0V-P	SPMIF512M-SECSC-0V-U
	Right	SBMIF512M-SECSC-0R-P	SBMIF512M-SECSC-0R-U
	Left	SBMIF512M-SECSC-0L-P	SBMIF512M-SECSC-0L-U
1GB	Vertical	SPMIF001G-SECSC-0V-P	SPMIF001G-SECSC-0V-U
	Right	SBMIF001G-SECSC-0R-P	SBMIF001G-SECSC-0R-U
	Left	SBMIF001G-SECSC-0L-P	SBMIF001G-SECSC-0L-U
2GB	Vertical	SPMIF002G-SECSC-0V-P	SPMIF002G-SECSC-0V-U
	Right	SBMIF002G-SECSC-0R-P	SBMIF002G-SECSC-0R-U
	Left	SBMIF002G-SECSC-0L-P	SBMIF002G-SECSC-0L-U
4GB	Vertical	SPMIF004G-SECSC-0V-P	SPMIF004G-SECSC-0V-U
	Right	SBMIF004G-SECSC-0R-P	SBMIF004G-SECSC-0R-U
	Left	SBMIF004G-SECSC-0L-P	SBMIF004G-SECSC-0L-U

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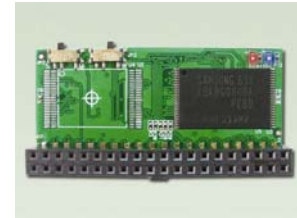
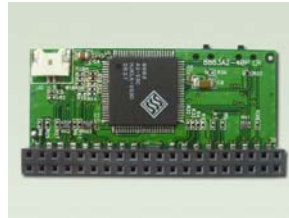
## Part number list - IDE 40-pin industrial grade :

40-pin micro IDE flash disk Form-factor

40-pin Vertical type

40-pin Horizontal-rightward

40-pin Horizontal-leftward



Operating temperature supports -40 °C ~ +85 °C

Capacity	Form-factor	PIO-4 mode	UDMA-4 mode
32MB	Vertical	WPMIF032M-SEISI-0V-P	WPMIF032M-SEISI-0V-U
	Right	WBMIF032M-SEISI-0R-P	WBMIF032M-SEISI-0R-U
	Left	WBMIF032M-SEISI-0L-P	WBMIF032M-SEISI-0L-U
64MB	Vertical	WPMIF064M-SEISI-0V-P	WPMIF064M-SEISI-0V-U
	Right	WBMIF064M-SEISI-0R-P	WBMIF064M-SEISI-0R-U
	Left	WBMIF064M-SEISI-0L-P	WBMIF064M-SEISI-0L-U
128MB	Vertical	WPMIF128M-SEISI-0V-P	WPMIF128M-SEISI-0V-U
	Right	WBMIF128M-SEISI-0R-P	WBMIF128M-SEISI-0R-U
	Left	WBMIF128M-SEISI-0L-P	WBMIF128M-SEISI-0L-U
256MB	Vertical	WPMIF256M-SEISI-0V-P	WPMIF256M-SEISI-0V-U
	Right	WBMIF256M-SEISI-0R-P	WBMIF256M-SEISI-0R-U
	Left	WBMIF256M-SEISI-0L-P	WBMIF256M-SEISI-0L-U
512MB	Vertical	WPMIF512M-SEISI-0V-P	WPMIF512M-SEISI-0V-U
	Right	WBMIF512M-SEISI-0R-P	WBMIF512M-SEISI-0R-U
	Left	WBMIF512M-SEISI-0L-P	WBMIF512M-SEISI-0L-U
1GB	Vertical	WPMIF001G-SEISI-0V-P	WPMIF001G-SEISI-0V-U
	Right	WBMIF001G-SEISI-0R-P	WBMIF001G-SEISI-0R-U
	Left	WBMIF001G-SEISI-0L-P	WBMIF001G-SEISI-0L-U
2GB	Vertical	WPMIF002G-SEISI-0V-P	WPMIF002G-SEISI-0V-U
	Right	WBMIF002G-SEISI-0R-P	WBMIF002G-SEISI-0R-U
	Left	WBMIF002G-SEISI-0L-P	WBMIF002G-SEISI-0L-U
4GB	Vertical	WPMIF004G-SEISI-0V-P	WPMIF004G-SEISI-0V-U
	Right	WBMIF004G-SEISI-0R-P	WBMIF004G-SEISI-0R-U
	Left	WBMIF004G-SEISI-0L-P	WBMIF004G-SEISI-0L-U

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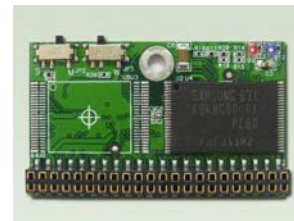
## Part number list - IDE 44-pin standard grade :

44-pin micro IDE flash disk Form-factor

44-pin Vertical type

44-pin Horizontal-rightward

44-pin Horizontal-leftward



Operating temperature supports 0 °C ~ 70 °C

Capacity	Form-factor	PIO-4 mode	UDMA-4 mode
32MB	Vertical	SPMIF032M-SECSC-4V-P	SPMIF032M-SECSC-4V-U
	Right	SBMIF032M-SECSC-4R-P	SBMIF032M-SECSC-4R-U
	Left	SBMIF032M-SECSC-4L-P	SBMIF032M-SECSC-4L-U
64MB	Vertical	SPMIF064M-SECSC-4V-P	SPMIF064M-SECSC-4V-U
	Right	SBMIF064M-SECSC-4R-P	SBMIF064M-SECSC-4R-U
	Left	SBMIF064M-SECSC-4L-P	SBMIF064M-SECSC-4L-U
128MB	Vertical	SPMIF128M-SECSC-4V-P	SPMIF128M-SECSC-4V-U
	Right	SBMIF128M-SECSC-4R-P	SBMIF128M-SECSC-4R-U
	Left	SBMIF128M-SECSC-4L-P	SBMIF128M-SECSC-4L-U
256MB	Vertical	SPMIF256M-SECSC-4V-P	SPMIF256M-SECSC-4V-U
	Right	SBMIF256M-SECSC-4R-P	SBMIF256M-SECSC-4R-U
	Left	SBMIF256M-SECSC-4L-P	SBMIF256M-SECSC-4L-U
512MB	Vertical	SPMIF512M-SECSC-4V-P	SPMIF512M-SECSC-4V-U
	Right	SBMIF512M-SECSC-4R-P	SBMIF512M-SECSC-4R-U
	Left	SBMIF512M-SECSC-4L-P	SBMIF512M-SECSC-4L-U
1GB	Vertical	SPMIF001G-SECSC-4V-P	SPMIF001G-SECSC-4V-U
	Right	SBMIF001G-SECSC-4R-P	SBMIF001G-SECSC-4R-U
	Left	SBMIF001G-SECSC-4L-P	SBMIF001G-SECSC-4L-U
2GB	Vertical	SPMIF002G-SECSC-4V-P	SPMIF002G-SECSC-4V-U
	Right	SBMIF002G-SECSC-4R-P	SBMIF002G-SECSC-4R-U
	Left	SBMIF002G-SECSC-4L-P	SBMIF002G-SECSC-4L-U
4GB	Vertical	SPMIF004G-SECSC-4V-P	SPMIF004G-SECSC-4V-U
	Right	SBMIF004G-SECSC-4R-P	SBMIF004G-SECSC-4R-U
	Left	SBMIF004G-SECSC-4L-P	SBMIF004G-SECSC-4L-U

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## Part number list - IDE 44-pin industrial grade :

44-pin micro IDE flash disk Form-factor

44-pin Vertical type

44-pin Horizontal-rightward

44-pin Horizontal-leftward



Operating temperature supports -40 °C ~ +85 °C

Capacity	Form-factor	PIO-4 mode	UDMA-4 mode
32MB	Vertical	WPMIF032M-SEISI-4V-P	WPMIF032M-SEISI-4V-U
	Right	WBMIF032M-SEISI-4R-P	WBMIF032M-SEISI-4R-U
	Left	WBMIF032M-SEISI-4L-P	WBMIF032M-SEISI-4L-U
64MB	Vertical	WPMIF064M-SEISI-4V-P	WPMIF064M-SEISI-4V-U
	Right	WBMIF064M-SEISI-4R-P	WBMIF064M-SEISI-4R-U
	Left	WBMIF064M-SEISI-4L-P	WBMIF064M-SEISI-4L-U
128MB	Vertical	WPMIF128M-SEISI-4V-P	WPMIF128M-SEISI-4V-U
	Right	WBMIF128M-SEISI-4R-P	WBMIF128M-SEISI-4R-U
	Left	WBMIF128M-SEISI-4L-P	WBMIF128M-SEISI-4L-U
256MB	Vertical	WPMIF256M-SEISI-4V-P	WPMIF256M-SEISI-4V-U
	Right	WBMIF256M-SEISI-4R-P	WBMIF256M-SEISI-4R-U
	Left	WBMIF256M-SEISI-4L-P	WBMIF256M-SEISI-4L-U
512MB	Vertical	WPMIF512M-SEISI-4V-P	WPMIF512M-SEISI-4V-U
	Right	WBMIF512M-SEISI-4R-P	WBMIF512M-SEISI-4R-U
	Left	WBMIF512M-SEISI-4L-P	WBMIF512M-SEISI-4L-U
1GB	Vertical	WPMIF001G-SEISI-4V-P	WPMIF001G-SEISI-4V-U
	Right	WBMIF001G-SEISI-4R-P	WBMIF001G-SEISI-4R-U
	Left	WBMIF001G-SEISI-4L-P	WBMIF001G-SEISI-4L-U
2GB	Vertical	WPMIF002G-SEISI-4V-P	WPMIF002G-SEISI-4V-U
	Right	WBMIF002G-SEISI-4R-P	WBMIF002G-SEISI-4R-U
	Left	WBMIF002G-SEISI-4L-P	WBMIF002G-SEISI-4L-U
4GB	Vertical	WPMIF004G-SEISI-4V-P	WPMIF004G-SEISI-4V-U
	Right	WBMIF004G-SEISI-4R-P	WBMIF004G-SEISI-4R-U
	Left	WBMIF004G-SEISI-4L-P	WBMIF004G-SEISI-4L-U

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Remarks: The optional data-transfer modes and IDE interface is always Fixed Disk mode:

1. P: optional as PIO-4 mode / Fixed disk type
2. U: defaulted as UDMA-4 mode / Fixed disk type

**Part Number Decoder :**

**X1 X2 X3 X4 X5 X6 X7 X8 X9** — **X11 X12 X13 X14 X15** — **Y1 Y2** — **Z1** **C**

**X1** : Grade

S : Standard grade – operating temp. 0° C ~ 70 ° C

W : Industrial grade – operating temp. -40° C ~ 85 ° C

**X2** : The material of case

B : Bare (without case)

P : Plastic case

**X3 X4 X5** : Product category

MIF : micro IDE Flash (module)

**X6 X7 X8 X9** : Capacity

<b>032M:</b>	32MB	<b>512M:</b>	512MB
<b>064M:</b>	64MB	<b>001G:</b>	1GB
<b>128M:</b>	128MB	<b>002G:</b>	2GB
<b>256M:</b>	256MB	<b>004G:</b>	4GB

**X11** : Controller

S : 3S 88x3 A5 (Titans Series)

**X12** : Controller version

A,B,C.....

**X13** : Controller grade

C : Commercial grade

I : Industrial grade

**X14** : Flash IC

S : Samsung SLC-NAND Flash IC

**X15** : Flash IC grade / Type

C : Commercial grade

I : Industrial grade

**Y1 Y2** : MIF orient only

0V : 40-pin IDE Vertical MIF

0R : 40-pin IDE Right-oriented MIF

0L : 40-pin IDE Left-oriented MIF

4V : 44-pin IDE Vertical MIF

4R : 44-pin IDE Right-oriented MIF

4L : 44-pin IDE Left-oriented MIF

**Z1** : Data transfer rate

IDE interface is always Fixed Disk Mode

P : PIO-4 mode / fixed disk type

U : defaulted as UDMA-4 mode / fixed disk type

**C** : Reserved for specific requirement

C : Conformal-coating

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