

# Product Specifications

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## Hercules Series Industrial (Rugged metal) CompactFlash (CF) card



### Product features

- ❖ SLC - NAND type flash technology
- ❖ Compatible with CompactFlash® specification 4.1
- ❖ CompactFlash® Type I form-factor
- ❖ Optional for standard casing and rugged metal casing
- ❖ Compatible with ATA/ATAPI-6 standard
- ❖ Data transfer mode support PIO 0-6 and UDMA 0-5
- ❖ Performance up to 45MB/sec
- ❖ Capacity from 128MB up to 16GB

### Product specifications

<b>Compatibility</b>	❖ ATAPI-6 and True IDE mode
<b>Flash technology</b>	❖ SLC-NAND type flash based
<b>Form-factor</b>	❖ CompactFlash type I
<b>Host Interface</b>	❖ Female 50 pins
<b>Performance</b>	
Data transfer mode	❖ PIO-4 mode or UDMA-4 mode (def.)
Data transfer rate	❖ 66.6MB/sec (ATA-5 / UDMA-4) ❖ 16.6MB/sec (ATA-3 / PIO-4)
Sequential read	❖ 45 MB/sec (Max. /with dual flash)
Sequential write	❖ 31 MB/sec (Max. /with dual flash)
Average access time	❖ 0.2ms (estimated)
<b>Environmental specification</b>	
Operating temp.	❖ STD. 0°C ~ 70°C / IND. -40°C ~ 85°C
Non-operating temp.	❖ STD. -20°C ~ 80°C / IND. -50°C ~ 95°C
Humidity	❖ 10% ~ 95% non-condensing
Vibration	❖ 15G compliance to MIL-STD-810F
Shock	❖ 1,500G compliance to MIL-STD-810F
Altitude	❖ 70,000 feet

### Power consumption

Power requirement	❖ +5V ±10% / +3.3V ± 5%
Reading mode	❖ 60.1mA (Max.)
Writing mode	❖ 85.6mA (Max.)
Sleeping mode	❖ 7.8mA (Max.)

### Reliability

Wear-leveling	❖ Static wear-leveling algorithms
MTBF	❖ > 3,000,000 hours
ECC	❖ 4-bits per 512bytes block
Endurance	❖ > 2,000,000 cycles

### Physical specification

Weight (max.)	❖ Standard casing 12.0g/ 0.42 oz. ❖ Metal casing 15.0g/ 0.53 oz.
Dimension(W x L x H)	❖ 42.8 x 36.4 x 3.3 (mm)


**Conformal coating** ❖ Option for special request

### Warranty


Standard grade	❖ 3 years
Industrial grade	❖ 5 years

Operating temperature supports standard grade 0°C ~ 70°C and industrial grade -40°C ~ 85°C

Part number list - Standard CompactFlash card casing

Product picture	Capacity	0° C- 70° C	-40° C~ 85° C
	<b>128MB</b>	SPFC128M-MACSC-UF	WPCFC128M-MAISI-UF
	<b>256MB</b>	SPFC256M-MACSC-UF	WPCFC256M-MAISI-UF
	<b>512MB</b>	SPFC512M-MACSC-UF	WPCFC512M-MAISI-UF
	<b>1GB</b>	SPFC001G-MACSC-UF	WPCFC001G-MAISI-UF
	<b>2GB</b>	SPFC002G-MACSC-UF	WPCFC002G-MAISI-UF
	<b>4GB</b>	SPFC004G-MACSC-UF	WPCFC004G-MAISI-UF
	<b>8GB</b>	SPFC008G-MACSC-UF	WPCFC008G-MAISI-UF
	<b>16GB</b>	SPFC016G-MACSC-UF	WPCFC016G-MAISI-UF

Part number list - Rugged metal CompactFlash card casing

Product picture	Capacity	0° C~ 70° C	-40° C~ 85° C
	<b>128MB</b>	SRFC128M-MACSC-UF	WRCFC128M-MAISI-UF
	<b>256MB</b>	SRFC256M-MACSC-UF	WRCFC256M-MAISI-UF
	<b>512MB</b>	SRFC512M-MACSC-UF	WRCFC512M-MAISI-UF
	<b>1GB</b>	SRFC001G-MACSC-UF	WRCFC001G-MAISI-UF
	<b>2GB</b>	SRFC002G-MACSC-UF	WRCFC002G-MAISI-UF
	<b>4GB</b>	SRFC004G-MACSC-UF	WRCFC004G-MAISI-UF
	<b>8GB</b>	SRFC008G-MACSC-UF	WRCFC008G-MAISI-UF
	<b>16GB</b>	SRFC016G-MACSC-UF	WRCFC016G-MAISI-UF

Remarks: The optional data-transfer modes and disk types are:

1. PF: optional as PIO-4 mode / Fixed disk type
2. PR: optional as PIO-4 mode / Removable disk type
3. PA: optional as PIO-4 mode / Fixed disk & removable disk type auto-detection
- 4. UF: defaulted as UDMA-4 mode / Fixed disk type**
5. UR: optional as UDMA-4 mode / Removable disk type
6. UA: optional as UDMA-4 mode / Fixed disk & removable disk type auto-detection
7. AF: optional as UDMA & PIO mode auto-detection / Fixed disk type
8. AR: optional as UDMA & PIO mode auto-detection / Removable disk type
9. AA: optional as UDMA & PIO mode auto-detection / Fixed disk & removable disk type auto-detection

INDUSTRIAL  
CompactFlash Card

INDUSTRIAL  
PCMCIA ATA Card

INDUSTRIAL  
micro IDE Flash Disk

INDUSTRIAL  
micro SATA Flash Disk

INDUSTRIAL  
Solid State Disk

INDUSTRIAL  
Mini USB Flash Disk

INDUSTRIAL  
Card Reader

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INDUSTRIAL CompactFlash Card

INDUSTRIAL PCMCIA ATA Card

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INDUSTRIAL Solid State Disk

INDUSTRIAL Rugged Metal USB Flash Disk

INDUSTRIAL Adapter Card Reader

## Part number decoder

X1 X2 X3 X4 X5 X6 X7 X8 X9 — X11 X12 X13 X14 X15 — Z1 Z2 / C

## Example

S P C F C 5 1 2 M — M A C S C — U F / 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

**P** : Plastic frame kit

**R** : Rugged metal frame kit

### X3 X4 X5 ➤ Product category

**CFC** : CompactFlash (CF) card

### X6 X7 X8 X9 ➤ Capacity

**128M** : 128MB

**256M** : 256MB

**512M** : 512MB

**001G** : 1GB

**002G** : 2GB

**004G** : 4GB

**008G** : 8GB

**016G** : 16GB

### Z1 Z2 ➤ Data transfer rate

PF: optional as PIO-4 mode / Fixed disk type

PR: optional as PIO-4 mode / Removable disk type

PA: optional as PIO-4 mode / Fixed disk & removable disk type auto-detection

**UF: defaulted as UDMA-4 mode / Fixed disk type**

UR: optional as UDMA-4 mode / Removable disk type

UA: optional as UDMA-4 mode / Fixed disk & removable disk type auto-detection

AF: optional as UDMA & PIO mode Auto-detection / Fixed disk type

AR: optional as UDMA & PIO mode auto-detection / Removable disk type

AA: optional as UDMA & PIO mode auto-detection / Fixed disk & removable disk type auto-detection

### X11 ➤ Controller

**M** : SMI (Hercules 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

### C ➤ Reserved for specific requirement

**C** : Conformal-coating