DediProg – SPI Flash Programmer

- ◆ Focus on SPI Flash Programming Solution

ST

SST

CHINGIS(PMC)

ATMEL

WINBOND

SPANSION

INTEL

MXIC

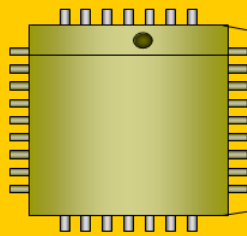AMIC

EON

ESMT / EliteMT

ESMT

FLASH TECHNOLOGY

One Stop Tools Solution

Do you know ?

Parallel Architecture
PLCC32 package

Serial Architecture
➢ Cheaper
➢ Smaller foot-print
➢ Same package for all densities
➢ Simple layout, noise reduction
➢ **High speed serial transfer**

Need Dedicated Solutions

Serial Flash
S0 package

Benefit:
- Cheaper
- Simple layout.
- Noise reduction
- High speed serial transfer

Challenges:
- Small Footprint
- Large Density
- Programming Time

Universal:

- different signals & power on each pins

- delays and high capacitance

- Long Programming Time

- are not adapted for SPI Flash Memories

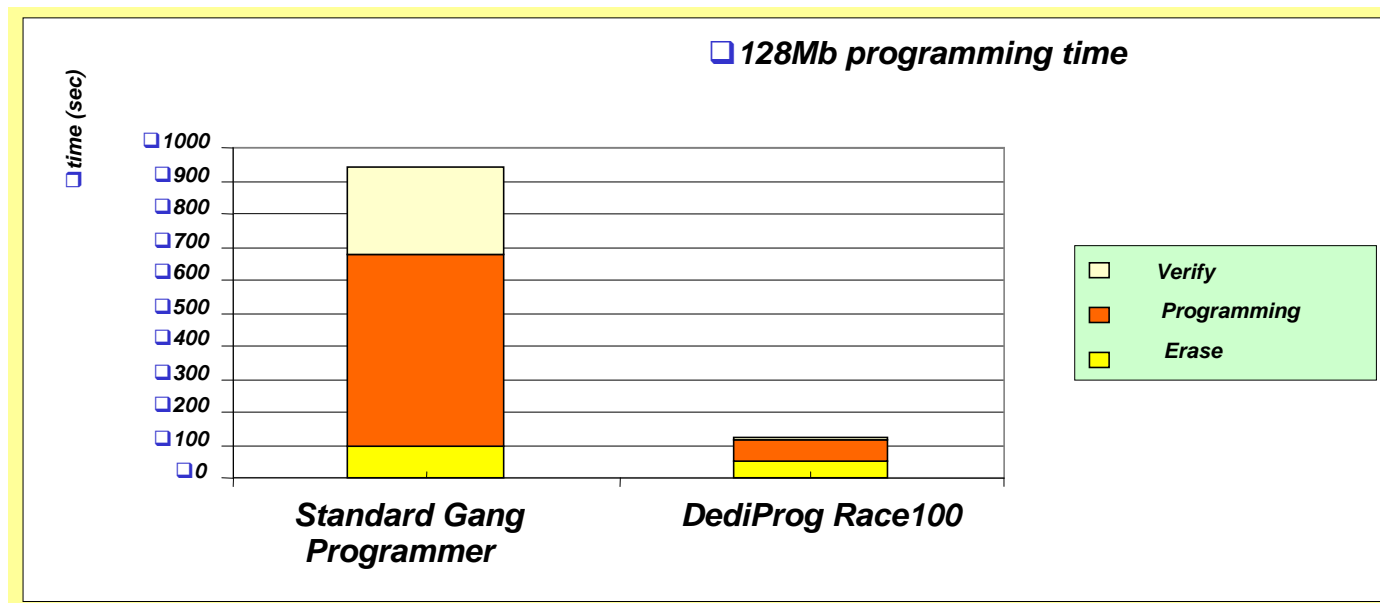**FLASH TECHNOLOGY**

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DediProg's Solution

♦ By Dedicating SPI Flash Programmers, DediProg is able to optimize and offer the best possible solution on the market

♦ **8 times faster** than the Universal Programmers in the market

❑ **128Mb programming time**

time (sec)

Legend:
- ❑ Verify
- ❑ Programming
- ❑ Erase

Y-axis: ❑1000 ❑900 ❑800 ❑700 ❑600 ❑500 ❑400 ❑300 ❑200 ❑100 ❑0

Categories: **Standard Gang Programmer**, **DediProg Race100**

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DediProg's Products

- ◆ **For Developers:**
  - ◆ ISP Programmer : SF100
  - ◆ Stand Alone Programmer: SF200
  - ◆ All-in-one Serial Flash Programmer: SF300
  - ◆ Backup Boot Flash kit: BBF
  - ◆ SPI Flash Emulator: EM100
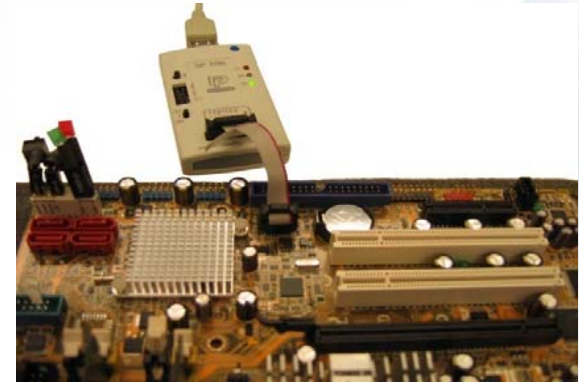
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DediProg's Products
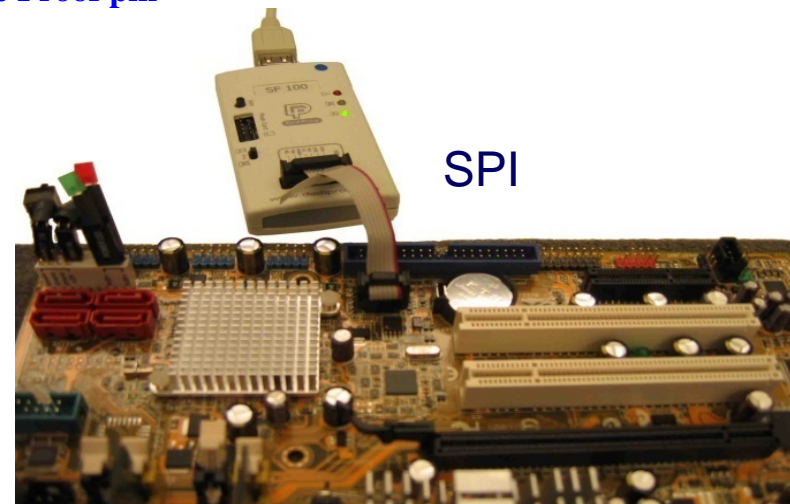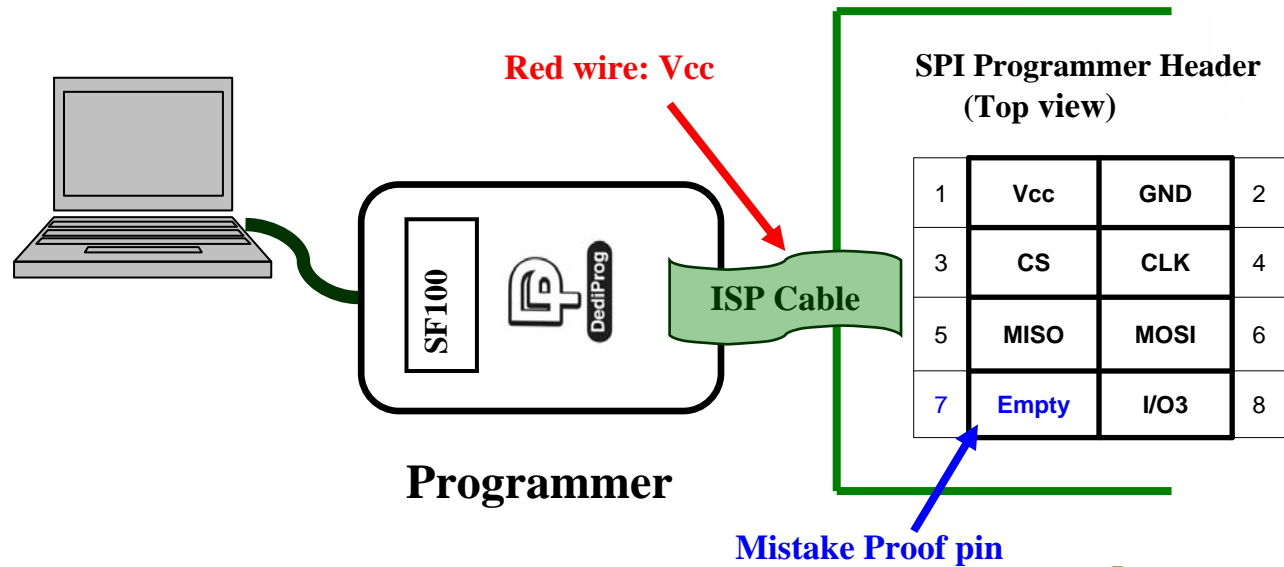
- ♦ **For Mass Production**

- ♦ RACE100-S4　　RACE100-S8　　RACE100-S16

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Easy to Use – ISP

Red wire: Vcc

SPI Programmer Header (Top view)

1	Vcc	GND	2
3	CS	CLK	4
5	MISO	MOSI	6
7	Empty	I/O3	8

SF100

ISP Cable

Programmer

Mistake Proof pin

SPI

Easy to Use – Off Line
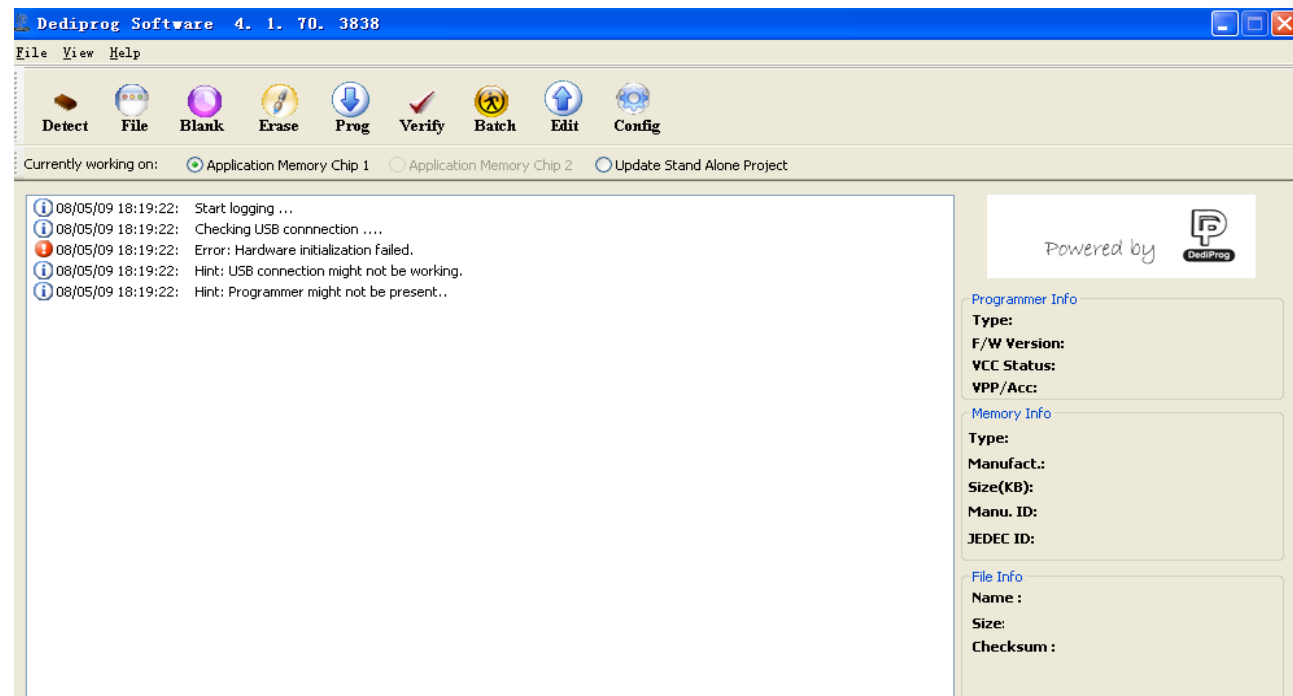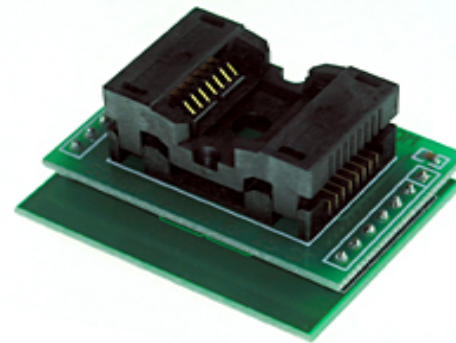
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Easy to Use – Backup Boot Flash

Computer

Cable

Switch

Update

USB

SF100

Backup Serial Flash

SPI

Disable

South Bridge

Main Serial Flash

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Easy to Use – Backup Boot Flash (2)

Switch

Backup Serial Flash

The motherboard connector can be saved By using our SO Test clip with SO8N, SO8W And SO16 packages.

- **SO8N**
- **SO8W**
- **SO16**

Enable

South Bridge

Main Serial Flash

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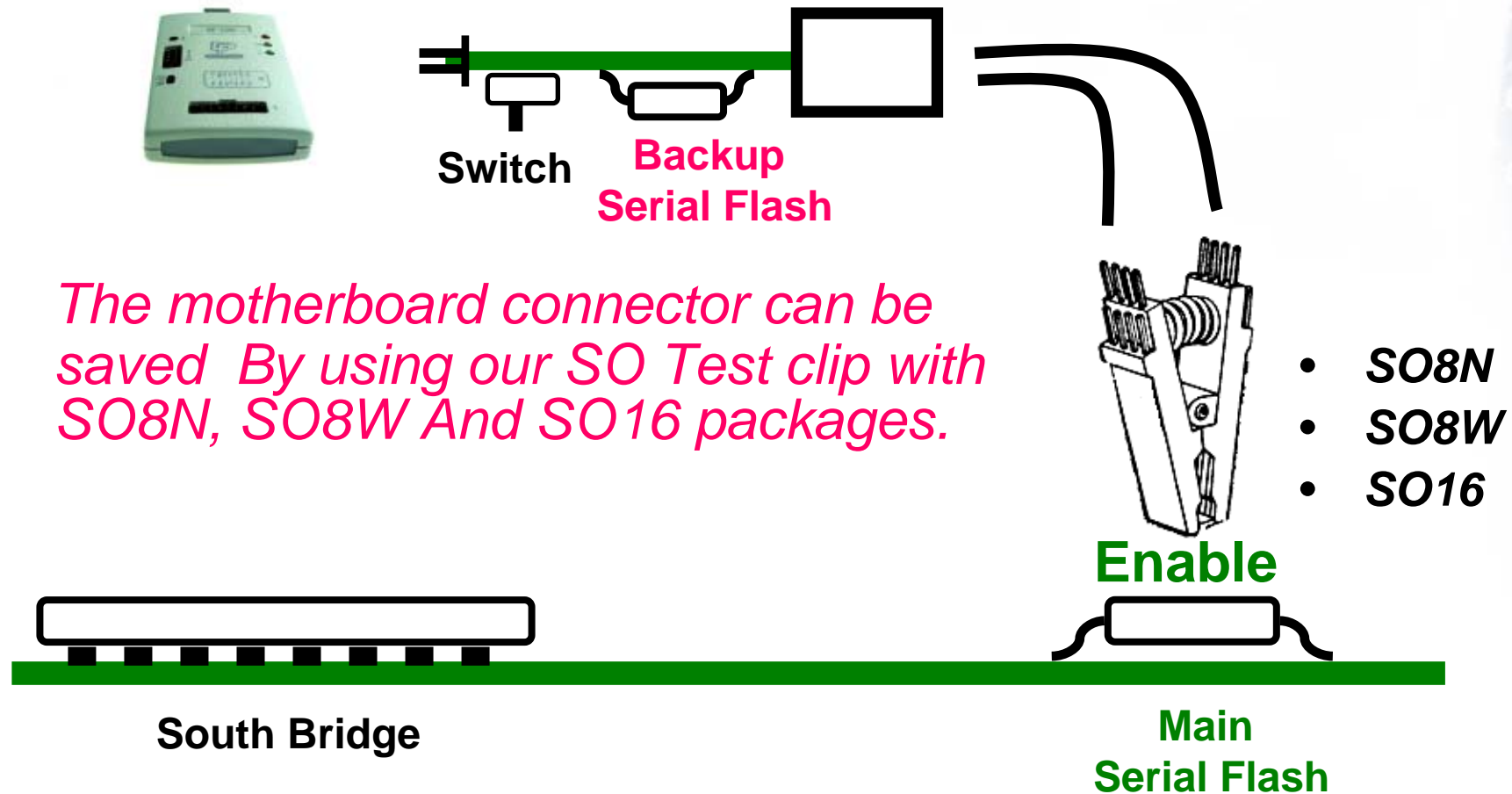
Easy to Use – Emulator
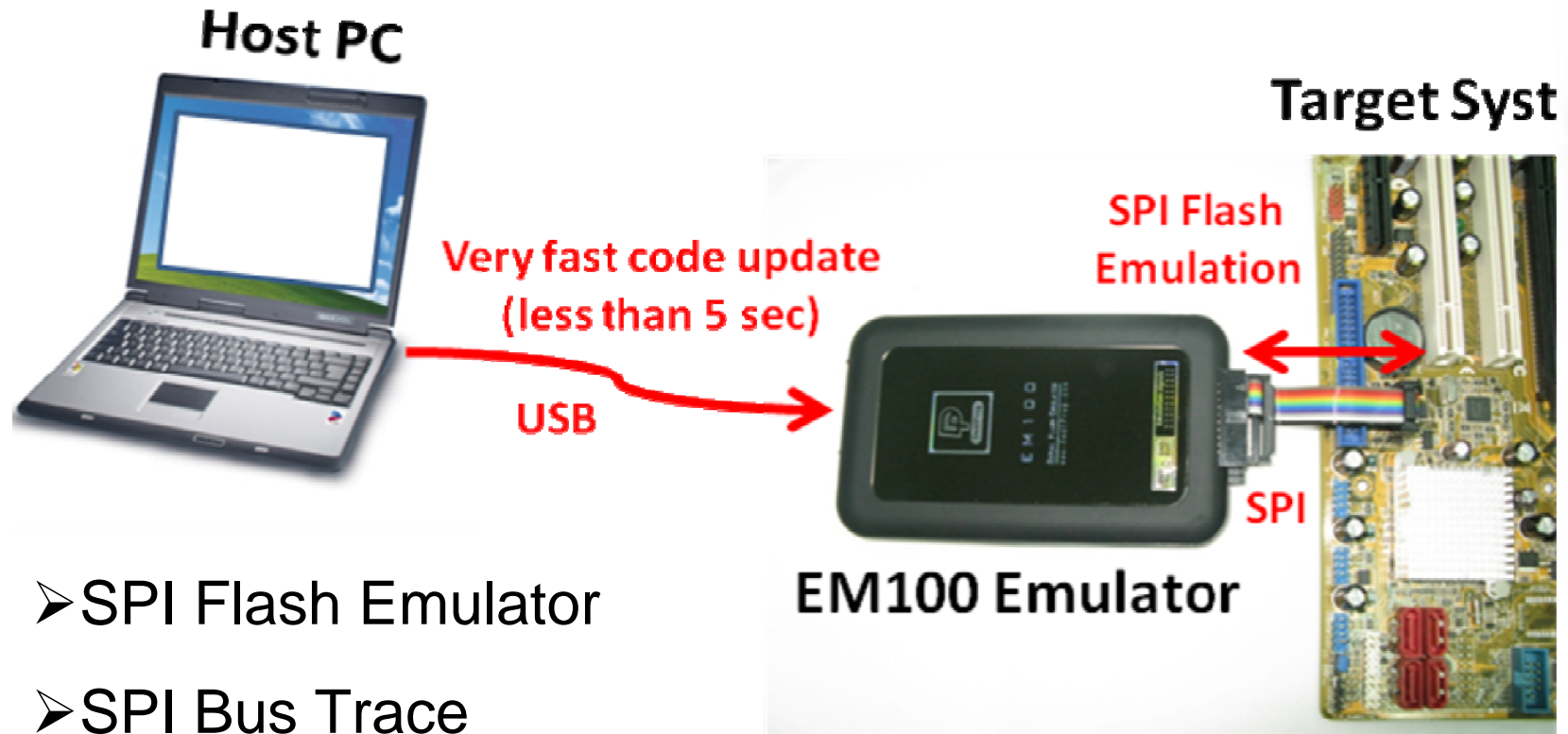
> SPI Flash Emulator

> SPI Bus Trace

> SPI Hyper Terminal

Easy to Use – For Mass Production

Easy to Use – For Mass Production (2)

ESD Protection

Cartridge Connectors

Power Plug

Power Swicth

SD Card Connector

UART Connector

USB Connector

ESD Protection
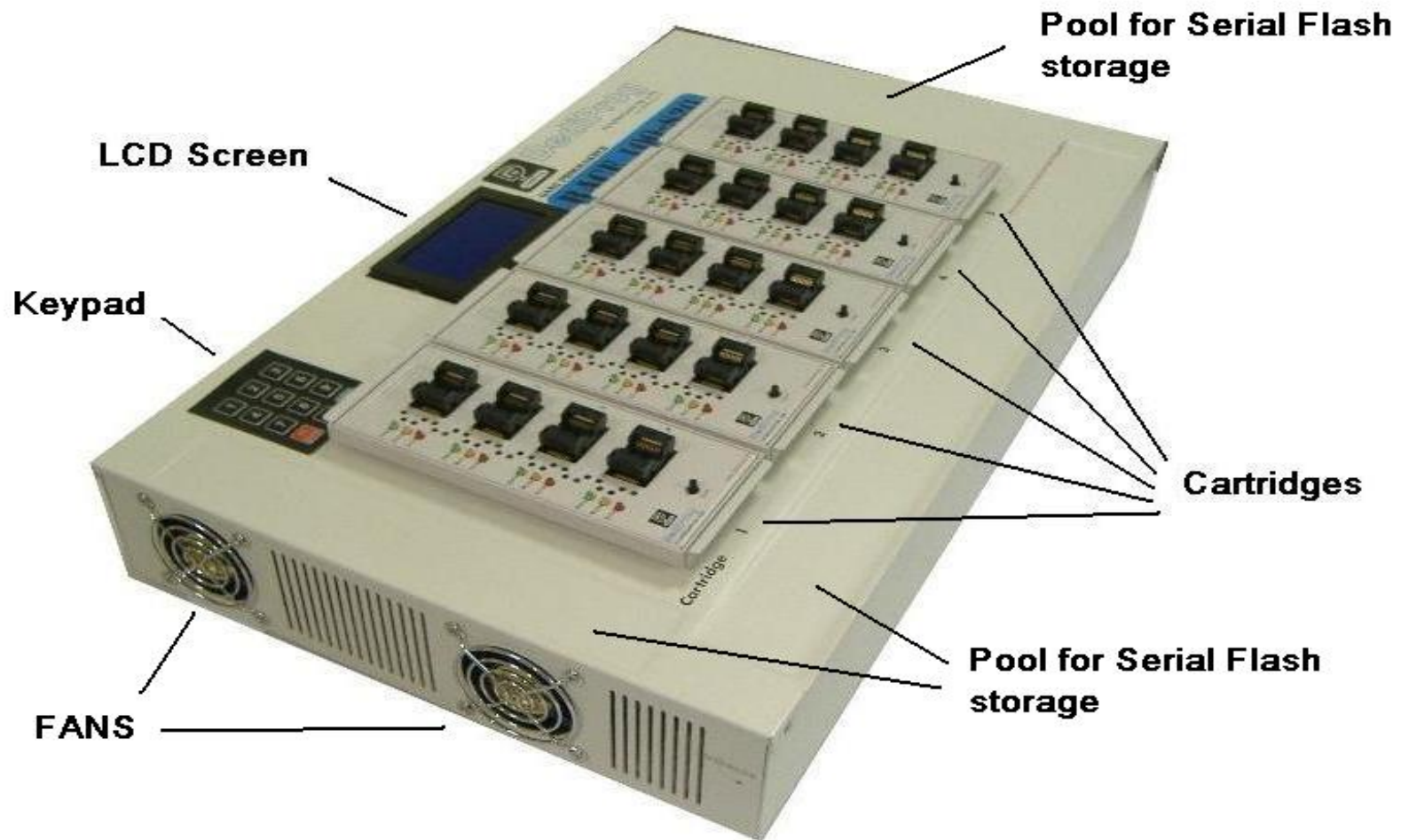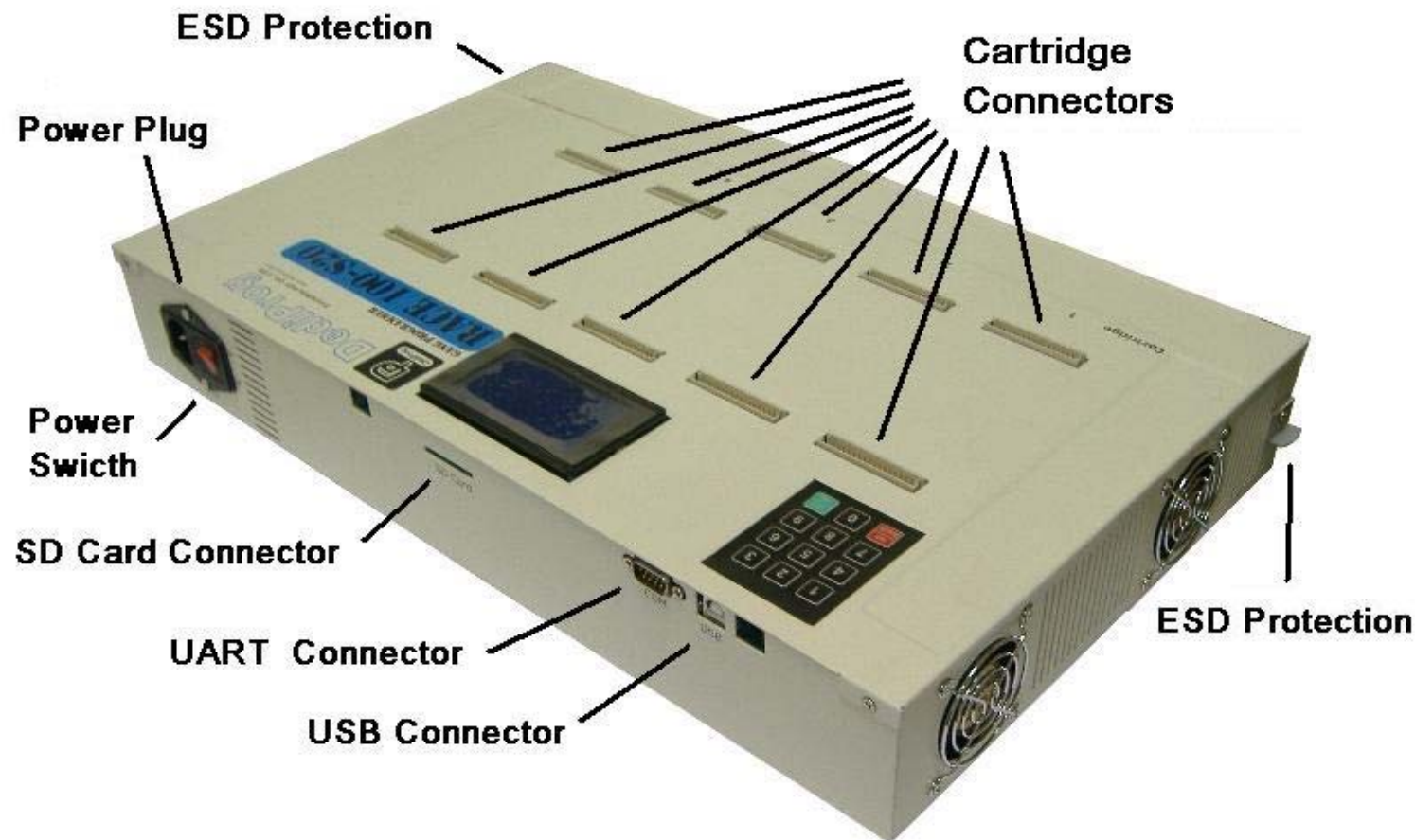
Easy to Use – For Mass Production (3)

- ### "Manual Start" Modes

  - Sockets of the same cartridge work as a group. Operator has to press the "Start Button" of the Cartridge to start the operations on all the sockets.

- ### "Auto Start" Modes

  - Each socket works independently, detects automatically the memory when insert and start the operations instantly according to the project definition.

"Manual Start"

"Auto Start"

Push

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Performance

❑ *128Mb programming time*

time (sec)

❑1000
❑900
❑800
❑700
❑600
❑500
❑400
❑300
❑200
❑100
❑0

Standard Gang
Programmer

DediProg Race100

☐ *Verify*

■ *Programming*
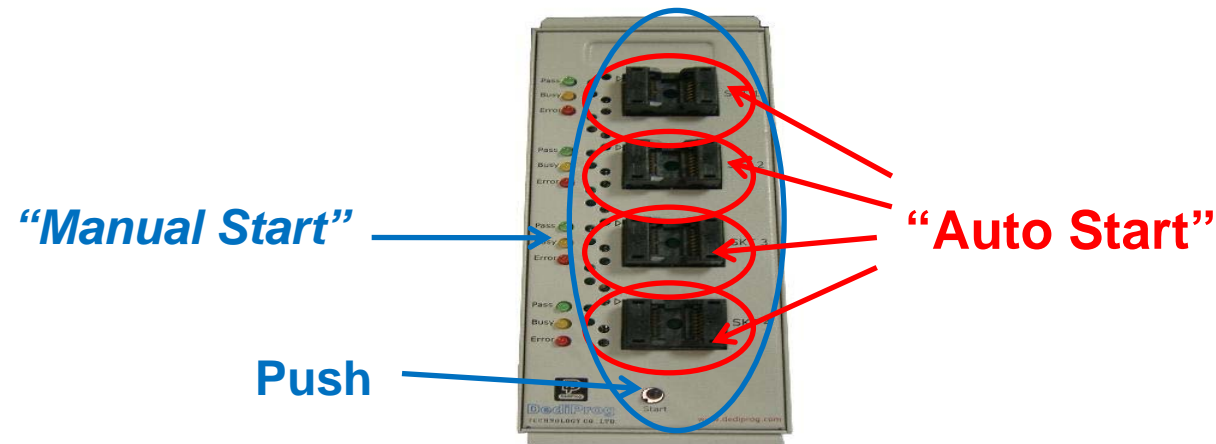
☐ *Erase*
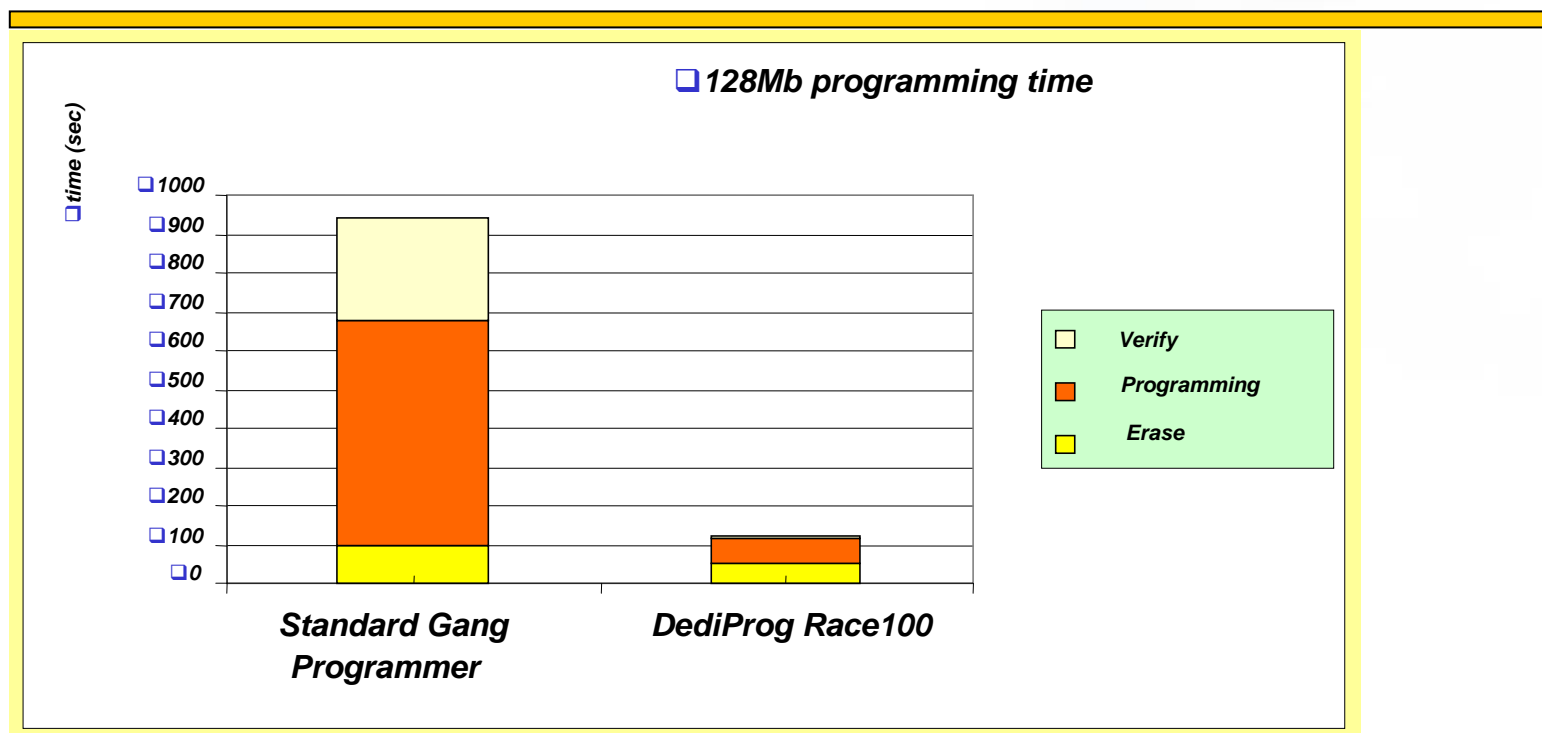
The Highest performances offered in the industry:

Serial Flash densities	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	64Mb	128Mb
Program + Verify	0.6s	1s	2s	3s	8s	15s	16s	75s

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Throughput

**Throughput comparison with manual Handling
(Handling time = 4 sec)**

	128Mb		64Mb		32Mb		16Mb	
	Std	Race	Std	Race	Std	Race	Std	Race
Performances P + V (s)	850	75	420	15	130	12	80	7
Sockets	4	20	4	20	4	20	4	20
Throughput By Hours	17	900	34	3.5K	110	4K	180	7K

**Std = Standard Gang Programmer
Race = DediProg Race100-S20**

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Why we can do the best ?

Interfaces: SD/MMC USB KEYPAD/LCD

Power System

Main Processor

Reference Memory

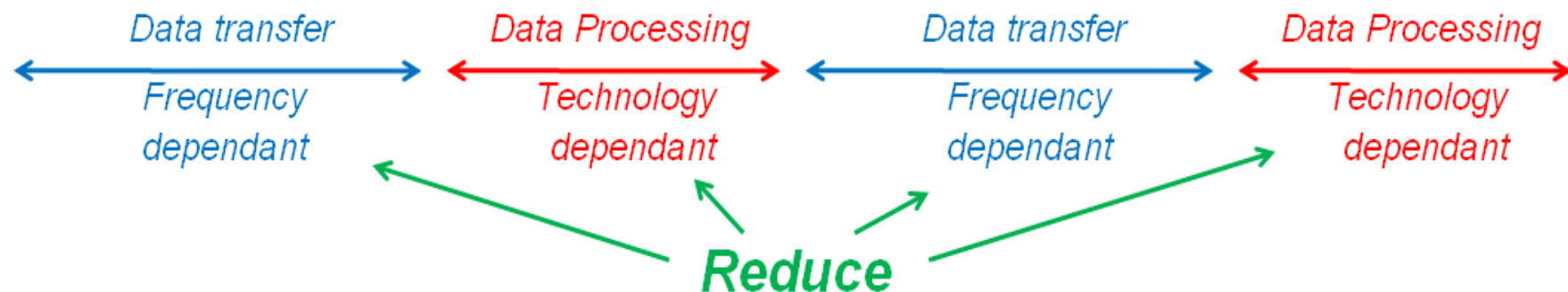Bridge Processor 1

Bridge Processor 2

Cartridges

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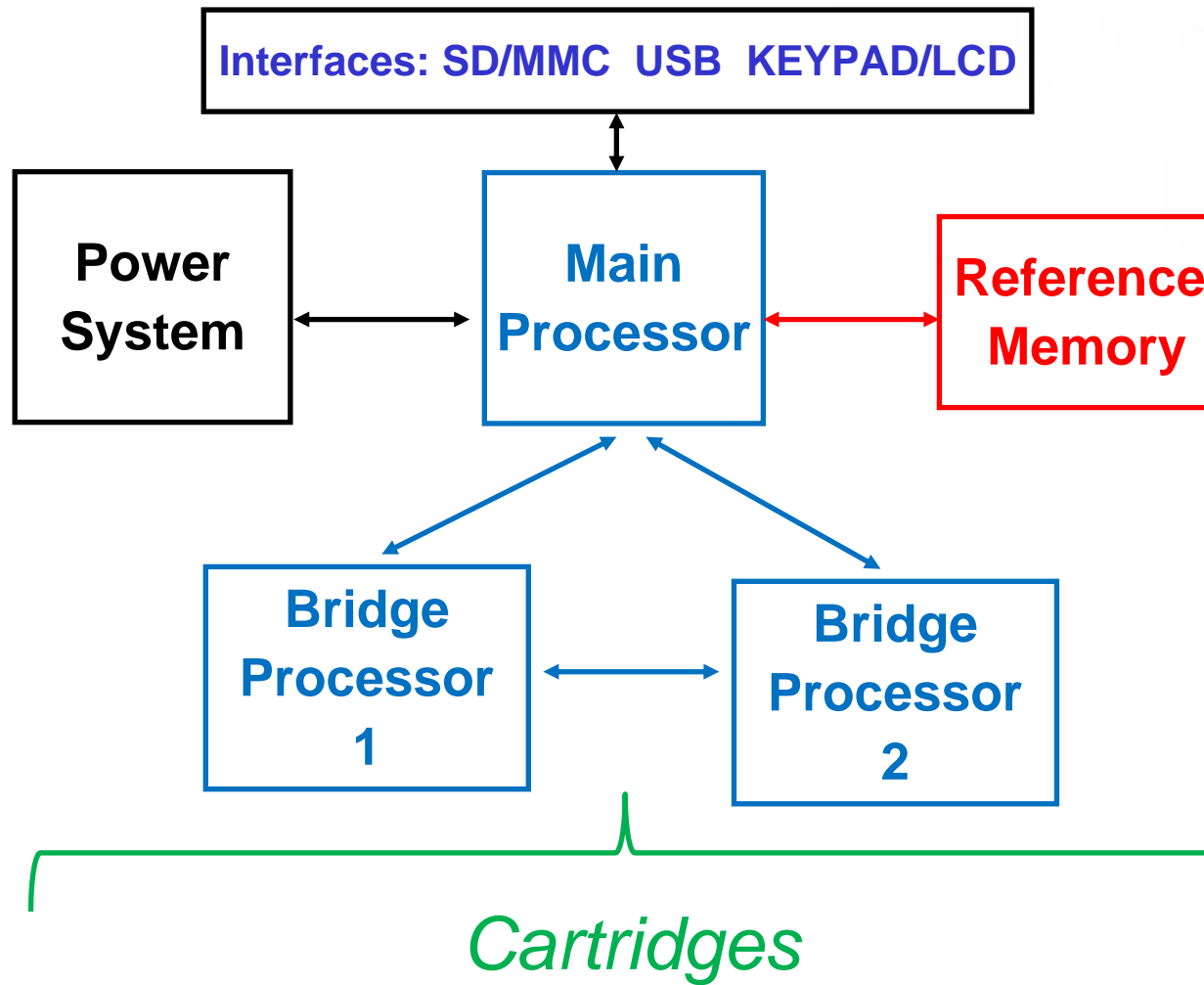
DediProg Architecture's Benefits

Tri-Processors architecture combined with our **Viper technology** for data processing ensure the shortest delay between packets in the industry:

→ Shortest Programming time with the lowest frequency for safer Timing Guard Band

Data transfer	Data Processing	Data transfer	Data Processing
Frequency dependant	Technology dependant	Frequency dependant	Technology dependant

Reduce

20MHz: $T/2$=25ns, Tclqv=8ns, Processor Data setup time= 2ns
  → Timing Guard band = 15ns

Safer

33MHz: $T/2$=15ns, Tclqv=8ns, Processor Data setup time= 2ns
  → Timing Guard band = 5ns

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Designed for Quality, Reliability and Robustness

Hardware:

➢ Dedicated for serial Flash: fixed pins assignment (no multiplexing, no added delay, no added capacitance)

➢ Dedicated power supply for each socket

➢ Dedicated over-current protection for each socket

➢ Dedicated control unit for each socket

➢ Optimized signal path

➢ Auto Diagnostics (Self power test, Leakage current test, Voltage test, continuity test, Wrong insertion detection..)

➢ Protection (Inrush current, overload current, over load Voltage, ESD..)

Firmware:

➢ CRC value calculated in the PC software when generating project file

➢ Data checking during project loading

➢ Dedicated CRC checking besides bit to bit comparison during verification

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Supported SPI Flash

- ◆ All of the existing SPI Flash
- ◆ Future SPI Flash as well

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ESMT

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Conclusions

- ◆ As a developer

- ◆ If your target board has no any programming interface

- ◆ If you hate to wait for ten or even more minutes for each flash updating

- ◆ As a manufacture

- ◆ If your products use large density SPI Flash

- ◆ If your volume is a big number

- ◆ If you want to increase the throughput by ten times

- ◆ Then DediProg is your Correct Choice and We are Ready to help you !

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Total Phase – I2C/SPI/USB

- **Protocol Analyzers**
  - Beagle USB 480 Protocol Analyzer
  - Beagle I2C/SPI Protocol Analyzer
  - Beagle USB 12 Protocol Analyzer
- **Host Adapters**
  - Aardvark I2C/SPI Host Adapter
  - Cheetah SPI Host Adapter
- **CAN Duo Interface**
- **Test Boards & Accessories**

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MCC – I2C/SMBus

- ◆ **I2C/SMBus monitor & adaptor**
  - ◆ I2C Bus Monitor Plus
  - ◆ I2C/SMBus Monitor
  - ◆ SMBus Smart Battery Tools
  - ◆ iPort/USB USB to I2C Host Adapter
  - ◆ iPort/AFM RS-232 to I2C Host Adapter
  - ◆ iPort/AI RS-232 to I2C Host Adapter
  - ◆ LabVIEW iPort/AI Driver Library
  - ◆ iPort Windows to I2C Host Adapter
  - ◆ iPort DLL/USB I2C Host Adapter
  - ◆ Variable Clock Rate I2C Bus Host Adapter
  - ◆ Systems, Boards, and Modules
  - ◆ Accessory Cables & Connectors

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