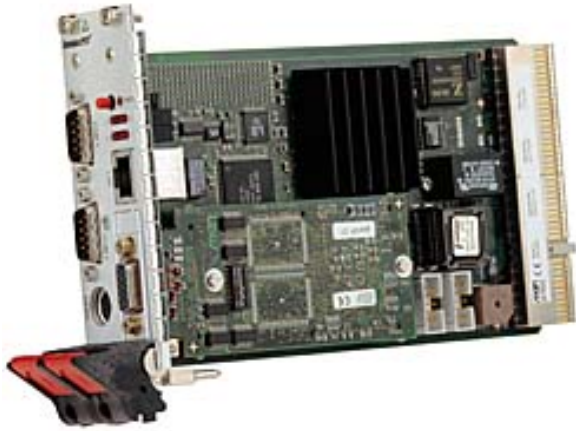*Embedded Solutions*

F2 - 3U CompactPCI Pentium SBC

- ◆ **Pentium (Tillamook) 266MHz**
- ◆ **2-slot 32-bit CompactPCI system master**
- ◆ **Ready for PXI**
- ◆ **384MB DRAM**
- ◆ **Graphics via PC-MIP**
- ◆ **10/100Mbit Fast Ethernet**
- ◆ **4 COMs, USB, 2 IDE, floppy, parallel, keyboard/mouse**
- ◆ **1 PC-MIP slot (Type I/II)**

The F2 is a high-end Pentium workstation optimized for industrial requirements in control and instrumentation in terms of functionality, environmental conditions and cost. Its "socket 7"-based computing core supports Intel's Tillamook CPUs with different clock speeds. The chip set supports the latest DRAM technology. All PCI components are carefully selected for optimum support regarding long-term availability.

In addition to state-of-the-art PC functionality - such as 10/100Mbit Ethernet, UARTs, EIDE, LPT, Microsoft ACPI, floppy, GPIO and USB - the F2 is equipped with a bundle of unique industrial functions: highly reliable, SMT-mounted SDRAM in addition to SO-

DIMMs, BIOS extensions for non-video, etc., support of PXI trigger signals (National Instruments), a local PC-MIP mezzanine for flexible and individual workstation I/O extensions like graphics, additional serial lines, etc.

The F2 is a two-card solution, comprised of a CPU board and an I/O board. While the CPU board can be plugged into a CompactPCI system slot, the I/O board leads signals to a rear I/O adapter for convenient rear I/O without nasty cabling.

The F2 is carefully prepared for all types of industrial qualification procedures such as extended temperature range (-40 to +85°C), shock, vibration, humidity etc.

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Technical Data

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CompactPCI Bus
- 3U CompactPCI CPU board rev. 2.1 compliant
- Ali Aladdin 5 chip set
  - · Compliance with PCI specification 2.1
  - · Up to 33 MHz PCI frequency
- 32-bit CompactPCI system slot functionality with 7 possible external loads due to PCI-to-PCI bridge
- DEC 21150 PCI-to-PCI bridge
- Single-slot solution (on PCI bus)
- V(I/O): +3.3V or +5V (Universal Board)

CPU
- Pentium with MMX, 266MHz Tillamook
- Passive cooling

Memory
- Up to 1MB Level 2 Cache
- 8 to 384 MB DRAM
  - · One 144-pin SO-DIMM socket for 1Mx64 to 32Mx64 synchronous DRAM modules (CAS latency 2-2-2)
  - · Up to 100MHz memory bus frequency
- 2 Mbit BIOS Flash

Interfaces
- Four serial communication ports (COM1..COM4)
- COM1, COM2: RS232 physical interface
  - · 9-pin D-Sub connectors at front panel
- COM2 also via rear I/O adapter
- COM3/COM4 via on-board serial interface adapters or via rear I/O adapter
- Full-duplex 10/100Mbits/s PCI Ethernet controller
  - · 21143 PCI LAN controller
  - · 100Base-TX/10Base-T interface at front panel
  - · Simultaneous transmission of 10Mbits/s and 100Mbits/s frames
- USB (Universal Serial Bus) interface
  - · Conforming to Open HCI 1.0a
  - · Via rear I/O adapter
- Keyboard and mouse at 6-pin PS2 connector at front panel uses external Y-cable
- Parallel port (SPP, EPP, ECP) via rear I/O adapter

PXI
- Five trigger lines compliant with PXI Spec. R1.0

Local Extensions
- PC-MIP I/O at front panel or via rear I/O adapter
  - · One PC-MIP mezzanine extension slot compliant with PC-MIP specification (Type I/II slot)

Mass Storage
- Two fast IDE hard-disk ports
  - · Up to 33 MB/s
  - · Supports UltraDMA and PIO mode 4
  - · Via rear I/O adapter
- Floppy-disk controller
  - · 2.88 MB
  - · Via rear I/O adapter

Miscellaneous
- Battery-backed real-time clock
- External user-definable watchdog
- Integrated hardware monitor with alarm function, supervises temperature, all voltages including back-up battery, and power supply (via rear I/O adapter)
- Reset button and LEDs at front panel
- Audible beeper

Electrical Specifications
- Supply voltage/power consumption:
  - · +5V (4.85V..5.25V), 1.8A typ. (Tillamook/266MHz, 32MB DRAM, P1 graphics PC-MIP, no peripherals)
  - · +3.3V (3.0V..3.6V), 1.2A typ. (Tillamook/266MHz, 32MB DRAM, P1 graphics PC-MIP, no peripherals)
  - · +12V (11.4V..12.6V); -12V (-11.4V..-12.6V) (power consumption determined by PC-MIPs used)
- MTBF: 30,000h @ 50°C

Mechanical Specifications
- Dimensions: conforming to CompactPCI specification for 3U boards
- Weight: 560g
- Supports backplanes with system slot left and right (MEN's standard 3U CompactPCI basic system (system slot right) already provides one extra slot for the F2's I/O board.)
- Front panel with system slot right (standard):
  - · 8HP total
  - · Only 4HP on CompactPCI backplane
- Front panel with system slot left:
  - · 8HP total for processors < 8W power dissipation
  - · 12HP for processors > 8W power dissipation
  - · Only 4HP/8HP on CompactPCI backplane

Environmental Specifications
- Temperature range (operation):
  - · 0..+45°C or 0..+60°C (266MHz Tillamook)
  - · Industrial temperature range on request
  - · Airflow: min. 10m³/h
- Temperature range (storage): -40..+85°C
- Relative humidity (operation): max. 95% non-condensing

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- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300m to + 3,000m
- Shock: 15g/0.33ms, 6g/6ms
- Vibration: 1g/5..2,000Hz

Safety
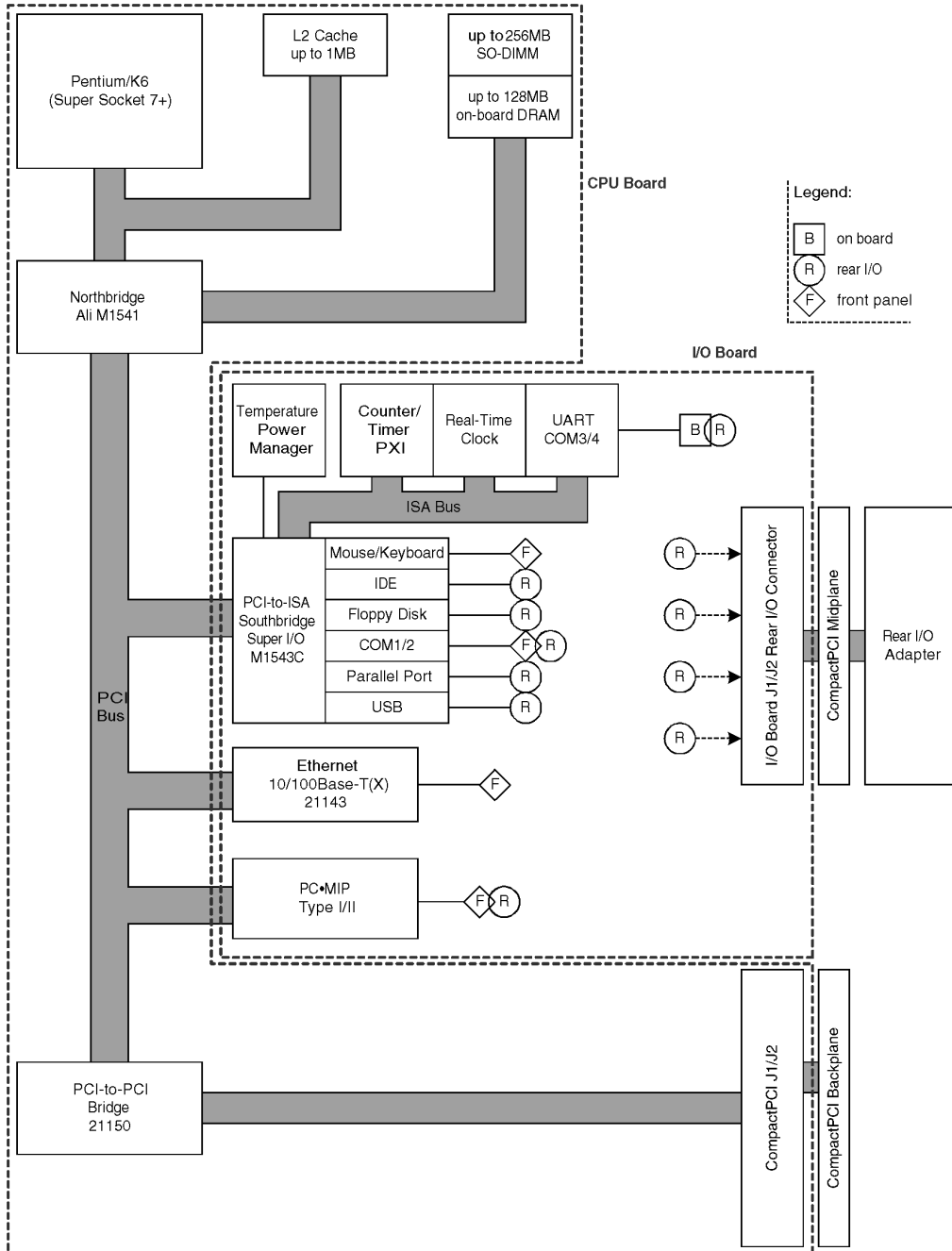- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

EMC
- Tested according to EN 55022 / 1999-05 (radio disturbance) and EN 55024 / 1999-05 (immunity) with regard to CE conformity

Software Support
- Plug and Play Award BIOS for industrial applications
  · Console Redirection: supports administration via terminal (VT100)
  · CMOS Back-Up: CMOS Configuration is backed-up in NVRAM
- Windows NT, Windows 2000/XP
- VxWorks
- Linux (on request)
- QNX (on request)
- RTX (on request)

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Diagram

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CPU Board

Pentium/K6
(Super Socket 7+)

L2 Cache
up to 1MB

up to 256MB
SO-DIMM

up to 128MB
on-board DRAM

Northbridge
Ali M1541

Legend:

B   on board

R   rear I/O

F   front panel

I/O Board

Temperature
**Power
Manager**

**Counter/
Timer
PXI**

Real-Time
Clock

UART
COM3/4

B R

ISA Bus

PCI-to-ISA
Southbridge
Super I/O
M1543C

Mouse/Keyboard — F
IDE — R
Floppy Disk — R
COM1/2 — F R
Parallel Port — R
USB — R

**PCI
Bus**

R

R

R

R

I/O Board J1/J2 Rear I/O Connector

CompactPCI Midplane

Rear I/O
Adapter

Ethernet
10/100Base-T(X)
21143 — F

**PC•MIP
Type I/II** — F R

PCI-to-PCI
Bridge
21150

CompactPCI J1/J2

CompactPCI Backplane

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Related Products

Standard Hardware

02F002-00	F2, CompactPCI 3U, single-board computer, Pentium MMX/266 MHz, 512KB cache, 32MB DRAM, 100Mbit Ethernet, 1 PC-MIP slot, 2-slot front panel, for backplanes with system slot right
02F002-02	F2, CompactPCI 3U, single-board computer, Pentium MMX/266MHz, 512KB cache, 32MB DRAM, 100Mbit Ethernet, COM1..4, 1 PC-MIP slot, 2-slot front panel, for backplanes with system slot left

Please refer to our 3U CompactPCI compare chart for a selection of further single-board computers with different processors and on-board functionality.

Systems & Card Cages

Disk drives for basic systems are delivered as requested. Different rack sizes, power supplies and backplanes on request.

0701-0009	Abk13.10.04 - nur intern; Preis wird nicht erhBuy:offen fexistierende Kunden Last Delivery:offen fexistierende Kunden Name: B.Schmitz Grund: Ersatz-Standardsystem 0701-0021 kann falle 3U-Karten verwendet werden --CompactPCI 19" 3U rack-mount enclosure, 3U 7-slot CompactPCI backplane, ATX power supply
0701-0018	CompactPCI 19" 4U/84HP rack-mount enclosure for 3U cards (vertical), 8-slot 3U CompactPCI backplane, system slot right, no rear I/O, space for hard-disk drive, floppy drive, 300W ATX power supply wide range 100..240VAC on front, 1U fan tray included

Accessories

05A000-10	Keyboard/mouse Y-cable 0.1m, 6-pin Mini DIN plug to two 6-pin Mini DIN receptacles
05F002-00	Mounting kit for 2 SA adapters for F2, version for backplanes with system slot right incl. 3U 1-slot CompactPCI front panel and two ribbon cables, without SA adapters
0500-0002	Battery M4T28... for Timekeeper M48T86 (spare part)
0713-0001	CompactPCI 1-slot 3U I/O midplane
08AD38-00	Rear I/O interface adapter for F2, 3U/80mm
08SA01-00	Serial interface adapter, RS232, not optically isolated, 0..+60°C
08SA02-00	Serial interface adapter, RS422/485, half duplex, optically isolated, 0..+60°C

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Related Products

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08SA02-01	Serial interface adapter, RS422/485, full duplex, optically isolated, 0..+60°C
08SA02-07	Serial interface adapter, RS422/485, full duplex, optically isolated, temperature range: -40..+85°C
08SA03-00	Serial interface adapter, RS232, optically isolated, 0..+60°C
08SA03-01	Serial interface adapter, RS232, optically isolated, -40..+85°C
08SA04-00	Serial interface adapter, TTY, optically isolated, 0..+60°C

For more functions realized with SA adapters, see the listing on MEN's website. You can also view our SA adapter compare chart for a quick overview of different functions. Please contact sales to make sure that these SA adapters can be used in the board configuration you are looking for.

Software

10F002-60	VxWorks V.5.4 / Tornado 2.0 BSP for F2

This MEN board is designed to work in a Microsoft Windows environment. For additional Windows driver packages provided or recommended by MEN please refer to the ordering numbers below.

QNX software for this MEN board is available from QNX (www.qnx.com). For QNX BSP and driver support provided by MEN please refer to the ordering numbers below.

VxWorks software for this MEN board is available from WindRiver Systems. For VxWorks BSP and driver support provided by MEN please refer to the ordering numbers below.

This board is an MEN product running Linux. For Linux BSP and driver support provided by MEN please refer to the ordering numbers below.

13F002-00	WindowsNT driver package for F2 (object code, MEN)

To use MDIS4 low-level drivers, you also need one of the MDIS4 system packages available for Windows, Linux, VxWorks, QNX, RTX or OS-9 (MDIS4 = MEN Driver Interface System).

13Z004-06	MDIS4 low-level driver sources for ALI1543 user LEDs on D2/F2
13Z008-06	MDIS4 low-level driver sources for GPIO lines on D2/F2
13Z009-06	MDIS4 low-level driver sources for Z8536 F2, watchdog, SMB

Documentation

20AD38-00	AD38 user manual
20F002-00	F2 user manual
21APPN002	Application Note: How to use Special Features of MEN's F2 under Linux using MDIS Drivers

For the most up-to-date ordering information and direct links to other data sheets and downloads, see the F2 online data sheet under www.men.de. --> Click here!

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