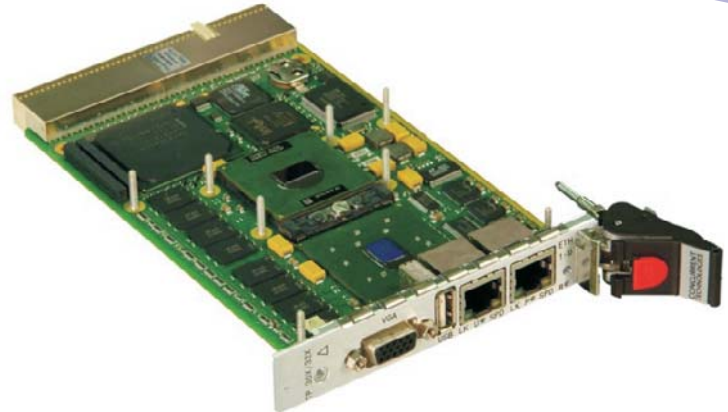


## Intel® Pentium® M Processor 3U Single Board Computer



### APPLICATIONS

The TP 302/32x is a PC-compatible, high performance, high functionality, single/dual slot, 3U CompactPCI® single board computer supporting either the 1.8 GHz Intel® Pentium® M processor 745 or the 1.4 GHz Intel® Pentium® M processor Low Voltage 738. Featuring 1 Gbyte DDR memory, dual Gigabit Ethernet, an onboard CompactFlash™ drive, Serial ATA150, an optional on-board EIDE hard disk drive and a variety of interfaces

the board is suitable for a range of environments within industrial control, transportation, telemetry, scientific and aerospace applications. Options to operate in harsh temperatures, ranging from -40°C to +85°C are available. To simplify the board's integration many popular industry standard operating systems are supported.

### HIGHLIGHTS

- 1.8 GHz or 1.4 GHz Intel Pentium M processor:
  - 64 Kbytes L1 cache
  - 2 Mbytes L2 cache
  - low power processor
  - no CPU fan needed
- 1 Gbyte of 333 MHz DDR SDRAM
- High performance EIDE interface:
  - CompactFlash™/Microdrive™ socket on single slot board
  - hard disk drive, CompactFlash/Microdrive and EIDE header available on optional second slot board (any 2 interfaces available at any time)
- 2 x Serial ATA150 (SATA150) channels via J2
- 2 x 10/100/1000Mbps Ethernet interfaces via front panel
- CompactPCI controller:
  - operates in the system slot
  - 32-bit at 33/66 MHz CompactPCI interface
  - 3U form-factor
- Up to 4 x USB 2.0 interfaces:
  - 1 or 2 via front panel
  - 2 via J2
- Graphics interfaces:
  - analog interface via front panel
  - DVI-D interface via J2
- PS/2 keyboard and mouse port
- Up to 4 serial channel interfaces:
  - 2 accessed via front panel on second slot board
  - 2 accessed via J2
- Watchdog and long duration timer
- Extended temperature versions available:
  - -25°C to +70°C (E-Series)
  - -40°C to +85°C (K-Series, includes humidity sealant)
  - supporting 1.4 GHz processor
- Support for Linux®, Windows® 2000, Windows® XP, Windows® XP Embedded, QNX® and VxWorks®
- Optional Transition Module for rear panel I/O:
  - 2 x USB, 1 x RS232, 1 x RS232/422/485, DVI-D graphics, 2 x SATA150, speaker, stereo audio and general purpose I/O interfaces

## Central Processor

- 1.8 GHz Intel® Pentium® M Processor 745:-
  - using a  $\mu$ FC-PGA 478 (micro Flip-Chip Pin Grid Array) package
- 1.4 GHz Intel® Pentium® M processor Low Voltage 738:-
  - using a  $\mu$ FC-BGA 479 (micro Flip-Chip Ball Grid Array) package
- common processor features are:-
  - 64 Kbytes of primary (L1) on-die cache
  - 2 Mbytes of secondary (L2) on-die cache
  - 400 MHz Front Side Bus (FSB)
- utilizes 64-bit Intel® 855GME chipset:-
  - supports 400 MHz bus frequency
  - uses Intel® 6300ESB I/O Controller Hub
- provision for ITP debug port

## DRAM

- 1 Gbyte 333 MHz DDR SDRAM soldered onboard

## Hard Disk Interfaces

- EIDE interfaces:-
  - supports up to Ultra-DMA 100 for high performance drives
  - single slot board supports on-board type I or type II CompactFlash site (not available on dual slot variants)
  - optional second slot boards supports type I or type II CompactFlash site, 2.5 inch disk drive and EIDE header for external drives
  - 2 interfaces available simultaneously
- 2 x Serial ATA150 interfaces:-
  - two channels accessible via J2
  - transfer rate up to 150 Mbytes/s

## Ethernet Interfaces

- 2 x channels supporting 10 Base-T, 100 Base-TX, 1000 Base-T:-
  - implemented by Intel® 82546GB via 64-bit 66MHz PCI bus
- both channels accessed via front panel RJ45 connectors

## Stereo Audio

- AC '97 interface via J2
- independent legacy speaker output via J2
- codec on rear transition module

## Graphics Interface

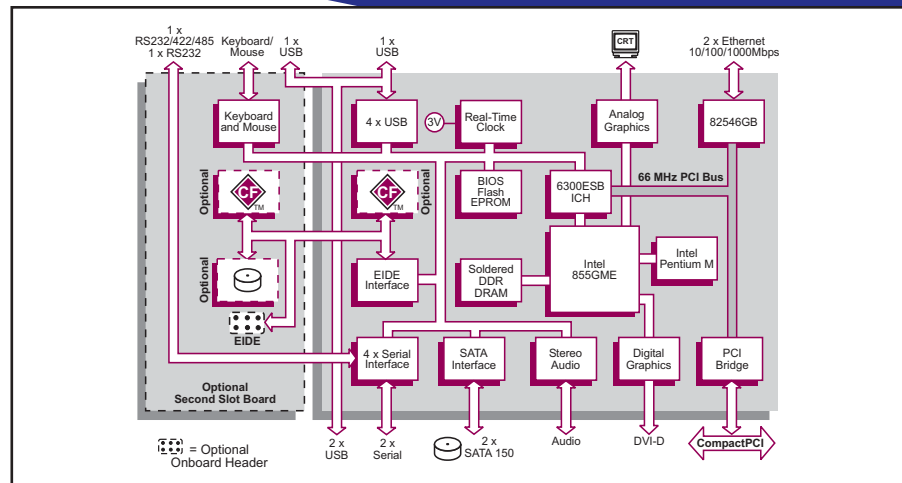
- implemented by the Intel® 855GME GMCH:-
  - resolutions up to 2048 x 1536 @75Hz on analog interface
  - resolutions up to 1400 x 1050 @ 60Hz on DVI-D interface
  - up to 16M colors
- analog interface accessed via a 15-way VGA connector on front panel
- DVI-D interface accessed via J2

## Serial Interface

- 4 x serial channels:-
  - 1 x RS232 and 1 x RS232/422/485 channels accessible via front panel on optional second slot board
  - 2 x serial channels (TTL) accessible via J2
- 16550 compatible UARTs
- supporting RI, CTS, RTS, DSR, DTR and DCD

## Flash EPROM

- 1 Mbyte of BIOS Flash EPROM
- application storage available on CompactFlash card



## Firmware Support

- Phoenix™ BIOS
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

## Software Support

- supports Windows® 2000, Windows® XP, Windows® XP Embedded, QNX®, Linux® and VxWorks®

## Other Peripheral Interfaces

- PC-compatible Real Time Clock (Year 2000 compliant)
- long duration timer
- watchdog timer
- CPU temperature monitor
- legacy speaker interface
- up to 4 x USB 2.0 interfaces:-
  - 1 via front panel
  - 1 via front panel on optional second slot board
  - 2 via J2
- PS/2 Keyboard and Mouse via single mini-DIN connector on optional second slot front panel
- 2 x GPIO signals via J2

## CompactPCI Interface

- compliant with PICMG 2.0 R3.0; 3.3V or 5V signaling levels:-
  - universal signaling support
- 33/66 MHz; 32-bit interface accessed via J1
- utilizing a PCI-PCI bridge for off-board accesses
- operates as a System Slot controller supporting up to 7 peripheral slots
- supports hot-swapping peripheral boards:-
  - PICMG 2.1 R2.0 Hot Swap Specification

## Electrical Specification

- +5V@3.4A (typical at 1.8 GHz with 1 Gbyte DRAM)
- +3.3V@3.3A (typical at 1.8 GHz with 1 Gbyte DRAM)
- +12V and -12V not required
- all voltages are tolerant to +5% / -3%

## Safety

- PCB (PWB) manufactured with flammability rating of 94V-0

## Environmental Specification

- operating temperatures:-
  - 0°C to +55°C (N-Series: up to 1.8 GHz)
  - -25°C to +70°C (E-Series: 1.4 GHz)
  - -40°C to +85°C (K-Series: 1.4 GHz)
- 10% to 90% Relative Humidity, non-condensing (operating):-
  - K-Series includes humidity sealant
- 40°C to +85°C (storage)
- 10% to 90% Relative Humidity, non-condensing (storage)

## Mechanical Specification

- 3U form-factor: 3.9 inches x 6.3 inches (100mm x 160mm)
- single or dual slot
- connectors: IEC-1076-4-101 for J1-J2
- shock:
  - 20g, 11ms, 1/2 sine (operating);
  - 30g, 11ms, 1/2 sine (non-operating)
- vibration:
  - 5Hz-2000Hz at 2g, 0.38mm peak displacement (operating);
  - 5Hz-2000Hz at 5g, 0.76mm peak displacement (non-operating)



Dual Slot Option

## ORDERING INFORMATION

Order Number	Product Description (Hardware)
TP 302/320-xy	1.4 GHz Pentium M processor Low Voltage 738
TP 302/321-xy	1.8 GHz Pentium M Processor 745

AD TP1/001-zz	Rear Transition Module
AD CP1/DR1-z4	2.5 inch Hard Disk Drive assembly

For z options please contact your local sales office

Replace the order number suffix (xy) with selections from the following:

where x =	where y =
1 - single slot	1 - reserved
2 - dual slot	2 - 1 Gbyte

For extended temperature, E-Series or K-Series, please contact your local sales office