CompactPCI

TP 442/34x
N, E, K - Series

Intel® Core™ 2 Duo Processor 3U Single Board Computer

RoHS 2002/95/EC

APPLICATIONS

The TP 442/34x is a PC-compatible high performance, high functionality, 3U CompactPCI® board supporting either the 2.16 GHz Intel® Core™ 2 Duo processor T7400 , 1.5 GHz Intel® Core™ 2 Duo processor L7400 or 1.73 GHz Intel® Celeron® M processor 530. It utilizes the Intel® 945GME GMCH to support up to 2 Gbytes of DDR2 SDRAM. This board can support a PMC/XMC site and features a variety of interfaces including four Serial ATA300 channels, dual Gigabit Ethernet, RS232/422 and USB. The TP 442/34x is a commercial air-cooled board, suitable for a range of environments within industrial control, transportation, security, telemetry, scientific and medical applications. Options to operate in temperatures, ranging from -40°C to +85°C are available. To simplify the board's integration many industry standard operating systems are supported.

HIGHLIGHTS

- 2.16 GHz or 1.5 GHz Intel® Core™ 2 Duo processor:
  - 4 Mbytes L2 cache
  - Intel® 64 Technology (64-bit computing support)
- 1.73 GHz Intel® Celeron® M processor 530:
  - 1 Mbyte L2 cache
  - Intel® 64 Technology (64-bit computing support)
- Up to 2 Gbytes of DDR2-667 SDRAM
- Single/dual 3U CompactPCI slot configurations available
- PMC/XMC module interface, on optional second slot board with front and rear user I/O:
  - 32-bit, 33/66MHz PCI operation
  - XMC module interface (x4 PCI Express®)
- 2 x 10/100/1000Mbps Ethernet interfaces
- 4 x Serial ATA300 channels:
  - 2 channels accessed via J2
  - 1 channel used for SATA hard drive on optional second slot boards
  - 1 channel used for CompactFlash® on optional second slot boards (including front loading CompactFlash)
- CompactFlash® site(s) on single and/or dual slot board
- 2 x serial channel interfaces
- Graphics interfaces, analog and digital
- 4 x USB 2.0 interfaces
- CompactPCI controller:
  - operates in the system slot or in a peripheral slot
  - PICMG 2.1 R2.0 (Hot-Swap Specification)
  - 32-bit, 33/66 MHz CompactPCI interface
  - option to bypass CompactPCI bus (Satellite Mode)
- IPMI (Intelligent Platform Management Interface):
  - PICMG 2.9 (System Management Specification)
- 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 1.5 GHz processor
- Support for Linux®, Windows® XP, Windows® XP Embedded, Windows® Server 2003, Windows® 2000, QNX®, LynxOS®, VxWorks® and Solaris™

CONCURRENT TECHNOLOGIES

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Specification

Central Processor

- 2.16 GHz Intel® Core™ 2 Duo processor T7400 or 1.5 GHz Intel® Core™ 2 Duo processor L7400:-
  - ➔ dual-core processor
  - ➔ 4 Mbytes of secondary (L2) on-die cache
  - ➔ 667 MHz Front Side Bus
- 1.73 GHz Intel® Celeron® M processor 530:-
  - ➔ single-core processor
  - ➔ 1 Mbyte of secondary (L2) on-die cache
  - ➔ 533 MHz Front Side Bus
- Intel® 64 Technology (64-bit computing)
- uses µFC-BGA 478 (micro Flip-Chip Ball Grid Array) package
- utilizes 64-bit Intel® 945GME GMCH
- utilizes Intel® ICH7-R I/O Controller Hub

DRAM

- up to 2 Gbytes DDR2-667 SDRAM:-
  - ➔ up to 2 Gbytes via SODIMM socket
  - ➔ single channel memory
  - ➔ peak bandwidth of up to 5.3 Gbytes/s
- accessible from processor or CompactPCI® bus

Optional Second Slot Boards

- second slot board, two options (see diagram)
- option 1 supports onboard:-
  - ➔ PMC/XMC site or 2.5" SATA disk drive
  - ➔ CompactFlash site
- option 2 supports onboard:-
  - ➔ SATA disk drive (or external disk drive)
  - ➔ CompactFlash site, accessible via front panel

PMC/XMC Interface

- single PMC/XMC site available on an optional second slot board (option 1 in diagram):-
  - ➔ 32-bit, 33/66 MHz PCI operation
  - ➔ 3.3V and 5V PCI signaling levels
  - ➔ XMC (Switched Mezzanine Card) interface supported via x4 PCI Express port
  - ➔ I/O via front panel and 64 bits via J2 on optional second slot board

Hard Disk Interfaces

- 4 x Serial ATA300 interfaces:-
  - ➔ transfer rate up to 300 Mbytes/s
  - ➔ 2 x channels accessible via J2
  - ➔ 1 x channel routed to 2.5" SATA disk drive on both types of optional second slot board (uses PMC/XMC site on option 1)
  - ➔ 1 x channel routed to a CompactFlash® site on both second slot board options
- 1 x EIDE interface:-
  - ➔ supports an on-board CompactFlash® site (type 1) on the single slot base board

Ethernet Interfaces

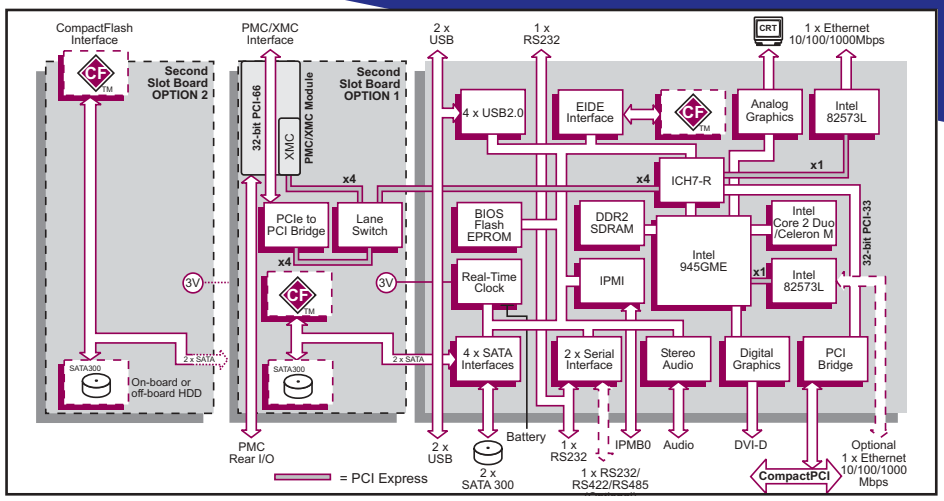
- up to 2 x channels supporting:-
  - ➔ 10 Base-T, 100 Base-TX, 1000 Base-T
  - ➔ implemented by 2 x Intel® 82573L via two x1 PCI Express® ports
- 1 x channel accessed via front panel RJ45
- option for one channel accessed via J2

Stereo Audio

- AC'97 interface on J2 supports Stereo Audio Codec on optional Rear Transition Module

Flash EPROM

- 1 Mbyte of BIOS Flash EPROM:-
  - ➔ hardware write protect provided



Graphics Interface

- implemented by the Intel® 945GME GMCH
- analog VGA accessed via a 15-way high density connector on front panel:-
  - ➔ resolutions up to 2048 x 1536 @ 16M colors
- flat panel supported by a Panel Link interface via J2 connector:-
  - ➔ resolutions up to 1600 x 1200 @ 16M colors

Serial Interfaces

- option for 1 x RS232/422/485 serial channel accessed via J2:-
  - ➔ supporting RI, CTS, RTS, DSR, DTR and DCD
- 16550 compatible UARTs
- 1 x RS232 serial channel accessed via front panel RJ45 connector and J2:-
  - ➔ supporting CTS, RTS, DSR, DTR and DCD
- serial channels are TTL level and are shifted to RS232/422/485 on the RTM

Other Peripheral Interfaces

- PC Real Time Clock (Year 2000 compliant)
- long duration timer; watchdog timer
- legacy speaker interface
- 4 x USB 2.0 interfaces:-
  - ➔ 2 channels accessed via J2
  - ➔ 2 channels accessed via front panel
- 2 x GPIO signals via J2

CompactPCI Interface

- universal signaling support, compliant with PICMG 2.0 R3.0; 3.3V or 5V signaling levels
- 33/66 MHz; 32-bit interface accessed via J1
- operates as a System Slot controller (supporting up to 7 peripheral slots) or operates in a Peripheral Slot
- PICMG 2.1 R2.0 Hot Swap Compliant
- option to disable CompactPCI interface (Satellite Mode):-
  - ➔ receives power from CompactPCI bus
  - ➔ board can be hot swapped

Firmware Support

- Phoenix™ TrustedCore BIOS
- Trusted Platform Module (TPM) support
- comprehensive Power-On Self-Test (POST)
- LAN boot firmware included

IPMI

- PICMG 2.9 R1.0 (System Management Specification):-
  - ➔ implements the IPMB0 interface
- on-board Baseboard Management Controller
- monitors CPU temperature, voltages and fan
- supports 8 Kbytes of non-volatile memory

Software Support

- supports Linux®, Windows® XP, Windows® XP Embedded, Windows® 2000, Windows® Server 2003, QNX®, LynxOS®, VxWorks® and Solaris™

Electrical Specification

- +5V@5.2 A (typical with 2 Gbytes DRAM)
- +3.3V@2.7 A
- +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: 2.16 GHz, 1.5 GHz)
  - ➔ -25°C to +70°C (E-Series: 1.5 GHz)
  - ➔ -40°C to +85°C (K-Series: 1.5 GHz)
- 5% to 95% Relative Humidity, non condensing (operating):-
  - ➔ K-Series includes humidity sealant
- -40°C to +85°C (storage)
- 5% to 95% 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, ½ sine (operating);
  30g, 11ms, ½ sine (non-operating)
- vibration:
  5Hz-2000Hz at 2g, 0.38mm peak displacement (operating);
  5Hz-2000Hz at 5g, 0.76mm peak displacement (non-operating)

ORDERING INFORMATION

Order Number	Product Description (Hardware)
TP 442/340-xy	1.73 GHz Celeron M processor 530
TP 442/341-xy	1.5 GHz Core 2 Duo processor L7400
TP 442/342-xy	2.16 GHz Core 2 Duo processor T7400
AD TP1/003-10	RTM with 9-way D-type Serial (use when x=1, 2 or 5)
AD TP1/003-20	RTM with RJ45 Serial and RJ45 Ethernet (use when x=3, 4 or 6)
AD 110/00z-zz	2.5 inch SATA 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 = width and rear I/O options	where y = memory size
1 - 1-slot with TTL Serial via J2	1 - reserved
2 - 2-slot with TTL Serial via J2, type 1	2 - 1 Gbyte
3 - 1-slot with Gigabit Ethernet via J2	3 - 2 Gbytes
4 - 2-slot with Gigabit Ethernet via J2, type 1	
5 - 2-slot with TTL Serial via J2, type 2	
6 - 2-slot with Gigabit Ethernet via J2, type 2	

note: types 1 and 2 refer to 2nd slot options 1 and 2 in the block diagram

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

Datasheet Code 1561/0308a