

VG6

Dual Node/Single Node Dual Core PowerPC® - 8641D 6U VMEbus Embedded Computer

The VG6 is a dual or single node processor VME bus computer board. Each node has a Freescale MPC8641(D), which includes a single or dual e600 CPU core and chipset functionality as dual low latency DDR2 SDRAM controller, a local bus controller, dual PCI Express 8 lane busses and several peripheral units. The VG6 can have up to four cores in total.

The VG6 is designed to meet the needs of high-performance embedded applications. It addresses such markets as industrial automation, medical, scientific and aerospace where real-time and/or signal processing are needed. Operating system support includes VxWorks® and Linux®. LynxOS® and Integrity are available upon request.

The ultra compact 6U single slot, all-in-one design with flexible memory, Flash configurations and on-board peripherals includes up to three Gigabit (VITA 31.1-compliant), up to two 10/100Mbit Ethernet ports, up to four UARTS, up to six USB ports, two serial-ATA compatible ports, two PMC extension slots and timer/counter.

Each processor features up to two cores with on-chip dual DDR2 SDRAM guaranteeing low latency. The two nodes are coupled via a PCI Express x8 lane bus.

Two on-board 64-bit PCI-X buses are supported in the dual processor version:

- One site exclusively for 64-bit 133 MHz PCI-X PMC1
- One for the on-board VME bridge and the second PMC site (64-bit PCI-X 100 MHz)

Combined with custom assembly for specific applications, the VG6 provides optimum price/performance for all kinds of OEM applications. The VG6 rugged version addresses extreme environment applications with optional conduction cooling, which extends the temperature range to -40°C to +85°C, increased shock and vibration immunity using stiffener bars and wedge locks, and conformal coating. The conduction-cooled VG6 complies with VITA 30.1-2001 and IEEE Std. 1101.2-1992 specifications.

FEATURES:

- Dual or single processor node
- For each node one MPC8641D with dual core or MPC8641 with single core; 1000 - 1333 MHz
- Freescale 8640/8640D ready
- 64 KB L1 + 1 MB L2 cache with ECC on-die per core
- E600 core with AltiVec™
- MPC8641 includes low latency dual DDR2 memory controller. (2x 64bit + ECC)
- VITA 30.1-2001 and ANSI/VITA 20-2001 compliant
- IEEE Std. 1101.2-1992 and ANSI/VITA 20-2001 compliant
- Up to 2 GB DDR2 SDRAM with ECC for each node
- 256 MB boot flash per node
- Three Gigabit Ethernet ports 10/100/1000 Mbit
- Two 10/100Mbit Ethernet
- Two SATA Ports
- One PMC/XMC (on request) extension slot with PCI-X 133 or 8x PCI Express
- One PMC extension slot with PCI-X 100
- VME64 2eSST interface
- Two serial I/O (RS-232)
- Two serial I/O (RS-422)
- Three USB interfaces per node
- 4x high resolution timers per node.
- 4x DMA channels per node
- One RTC with 128 Kbyte nvRAM per node
- Optional -40°C / +85°C TBD
- Optional conduction cooling
- High shock and vibration immunity
- Optional conformal coating
- Custom specific assembly versions

VG6 Dual Node/Single Node Dual Core PowerPC® - 8641D 6U VMEbus Embedded Computer

Specifications

Processor

- MPC8641D or MPC8641 @ 1.0 GHz or 1.33 GHz
- MPC8640D or MPC8640 offers a lower power option
- 1 MB L2 cache per core on die

SDRAM

- 1 GB to 2 GB DDR2 SDRAM soldered for added durability in rugged environments

Flash Boot ROM

- Up to 256 MB, 32-bit, high speed for each node with hardware write protection

Ethernet

Node A (or Single Node)

- One 10/100/1000 Mbit/s Ethernet port with front-IO
- One 10/100/1000 Mbit/s Ethernet port with rear-IO on P0 (VITA 31.1-compliant)
- One 10/100 Mbit/s Ethernet port with rear-IO on P2

Node B (only Dual Node)

- One 10/100/1000 Mbit/s Ethernet port with rear-IO on P0 (VITA 31.1-compliant)
- One 10/100 Mbit/s Ethernet port with rear-IO on P2

USB Ports

- Three USB ports per node:
- One to front panel (not in conduction cooled)
- Two to rear I/O

Serial I/O - RS-232/422/485

- Two 16550 compatible UARTs per MPC8641 with FIFOs

Node A (or Single Node)

- A_COM 0: RS232 up to 115.2 Kbaud with front-IO (Tx, Rx, RTS, CTS) and rear-IO (Tx, Rx)
- A_COM 1: RS422 up to 500 Kbit with rear-IO (Tx, Rx, RTS, CTS)

Node B (only Dual Node)

- B_COM 0: RS232 up to 115.2 Kbaud with rear-IO (Tx, Rx)
- B_COM 1: RS422 up to 500 Kbit with rear-IO (Tx, Rx, RTS, CTS)

VMEbus Backplane Interface

- Industry standard PCI-X to VME bus controller
- Full VME bus system controller
- FIFOs for write posting, DMA controller with linked list support
- Geographical addressing

Two Serial ATA Channel - Silicon Image SIL3132

- Two serial ATA with rear I/O at P0 (Rear I/O of PMC1 only, partially available)

Mezzanine Sites

- IEEE Std. 1101.2-1992 and ANSI/VITA 20-2001 compliant
- B_PMC1: 64-bit 33 MHz-133 MHz PCI(-X) and full rear-I/O* at P0 or usable as XMC (on request) slot with 8x PCI Express lanes (Vita42).
- A_PMC2: 64-bit 33 MHz-100 MHz PCI(-X) and full rear-I/O* at P2

* Depends on configuration (shared with SATA + UGPIO)

NVRAM/Real-Time Clock/Watchdog/ETI

- 128 KB non-volatile RAM with autostore
- Real-time clock
- Watchdog timer
- Elapsed time indicator (records cycles and on-time)

Temperature Sensors

- CPU die and ambient temperature

Power Requirements

- +5 V, +3.3 V - required
- ±12 V - only if required by mounted PMC module

Dimensions

- 6U (4HP) single slot Eurocard form factor
- Height: 9.2 in. (233.4mm)
- Depth: 6.3 in. (160mm)
- Thickness: 1.6 in. (40.6mm)

Front Panel and Rear I/O (Transition Module VG6TM)

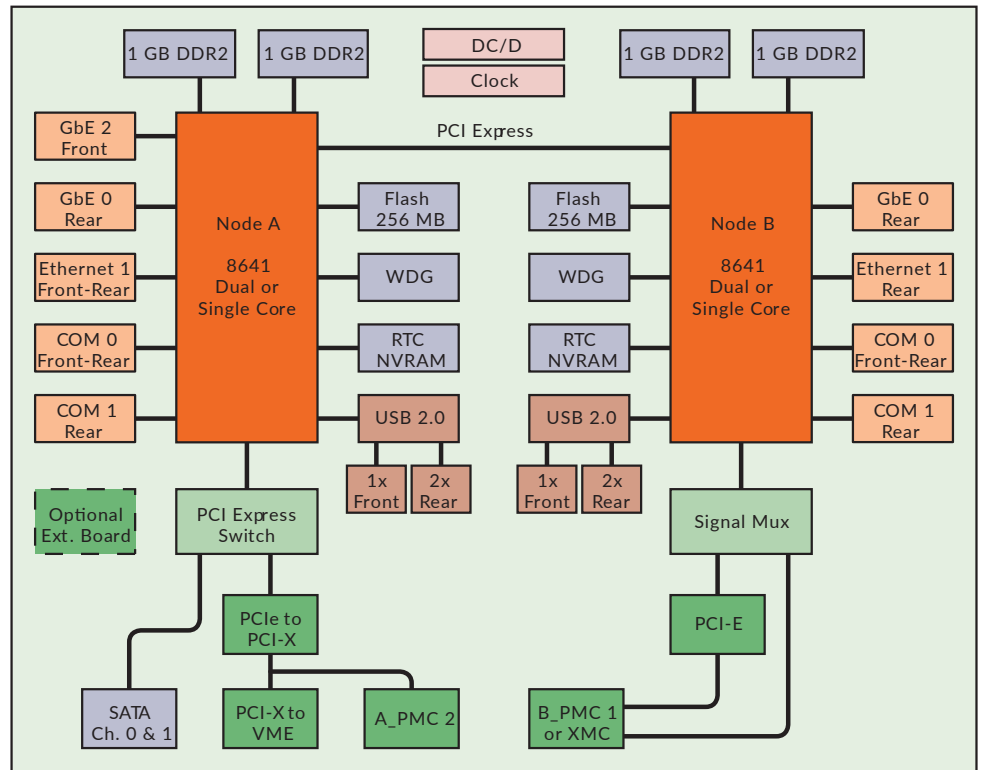
- PMC I/O slot 1 with full rear I/O support or partial configuration with serial ATA feature
- PMC I/O slot 2 available in full or partial configuration

Function	Full PMC2 -I/O	Partly PMC2 -I/O	Front Panel I/O
Single and Dual Node VG6S/D			
A_COM 0	•	•	•
A_COM 1	•	•	-
A_Eth. 0 100 Mbit	•	•	-
A_Eth. 1 1000 Mbit	•	•	-
A_Eth. 2 1000 Mbit	•	•	• ¹
A_USB Channel 0 & 1	•	•	-
A_USB Channel 2	-	-	• ¹
B_PMC 1			
(XMC on request)	64-pin	64-pin ²	•
A_PMC 2	64-pin	-	•
Reset	Reset	•	• ³
Watchdog A	-	•	-
Boot Select A	•	•	-
User LED A/B	-	-	LED
Card Fail	•	•	LED
COP A (onboard)	-	-	- ⁴
Additional for Dual Node VG6D (Node B)			
B_COM 0	•	•	•
B_COM 1	•	•	-
B_Eth. 0 100 Mbit	•	•	-
B_Eth. 1 1000 Mbit	•	•	-
B_USB Channel 0 & 1	•	•	-
B_USB Channel 2	-	-	• ¹
Watchdog B	-	•	-
Boot Select B	•	•	-
COP B (onboard)	-	-	- ⁴
1 Not available in Style 8 2 Only partially PMC2 Rear-IO when SATA 3 Reset push button on front panel and on transition module 4 Connector near front on board			



VG6 Dual Node/Single Node Dual Core PowerPC® - 8641D 6U VMEbus Embedded Computer

Block diagram



Ordering information

	Style 1	Style 3	Style 6	Level 8
Cooling method	Convection	Convection	Convection	Conduction
Conformal coat	Optional	Optional	Standard	Standard
High/low temp - operational	0° to 70°C*	-40° to +70°C*	-40° to +70°C*	-40° to +80°C
Storage temperature	-55° to +105°C**	-55° to +105°C**	-55° to +105°C**	-55° to +105°C**
Random vibration	2g rms (5-100 Hz)	2g rms (5-100 Hz)	2g rms (5-2000 Hz)	14g rms (5-2000 Hz)
Shock	12g (6ms)	20g (6ms)	20g (6ms)	40g (11ms)

*upper temperature dependant on airflow - consult manual

**limited to -40° to +85°C if battery included

Contact your Abaco Systems sales person for ordering information.

WE INNOVATE. WE DELIVER. YOU SUCCEED.

Americas: 866-OK-ABACO or +1-866-652-2226 Asia & Oceania: +81-3-5544-3973

Europe, Africa, & Middle East: +44 (0) 1327-359444

Locate an Abaco Systems Sales Representative visit: abaco.com/products/sales

abaco.com @AbacoSys

©2016 Abaco Systems. All Rights Reserved. All other brands, names or trademarks are property of their respective owners. Specifications are subject to change without notice.