

Before You Begin

INTRODUCTION

It is important to be aware of the system considerations listed below before installing your TKL8255 (8255-xxx) SHB. Overall system performance may be affected by incorrect usage of these features.

DDR4-2133 MEMORY

Trenton recommends unbuffered ECC PC4-17000 memory modules for use on the TKL8255. These unbuffered ECC (64-bit) DDR4 DIMMs must be DDR4-2133 (PC4-17000) compliant. The TKL8255 supports DDR4-1866 (PC4-14900) but optimal performance will not be achieved when these modules are utilized. The TKL8255 supports a maximum of 64GB of memory.

NOTES:

- To maximize memory interface speed, populate each memory channel with DDR4 DIMMs having the same interface speed. The SHB will support DIMMs with different speeds, but the memory channel interface will operate speed of the slowest DIMM.
- All memory modules must have gold contacts.
- All memory modules must have a 288-pin edge connector
- The SHB supports the following memory module memory latency timings:
 - 16-16-16 for 2133MHz DDR4 DIMMs
- Populate the memory sockets starting with memory channel A and begin by using the DIMM socket closest to the CPU first. Refer to the TKL8255 board layout drawing and populate the memory sockets using the population order illustrated in the chart below:

Population order [#]	CPU1
1	BK0A
2	BK1A
3	BK0B
4	BK1B

[#]Using a balanced memory population approach ensures maximum memory interface performance. A “balanced approach” means using an even number of DIMMs on the TKL8255 SHB whenever possible.

The memory DIMMs on the SHB connect directly to the CPU and at least one memory module must be installed on the board.

PCI EXPRESS 3.0 LINKS AND PICMG® 1.3 BACKPLANES

The A0 through A3 PCI Express® links on the SHB connect directly to the processor onboard the TKL8255. These links can operate as either PCI Express 3.0, 2.0 or 1.1 links based on the end-point devices on the backplane that are connected to the SHB and the backplane’s PCIe link design itself. In addition to automatically configuring themselves for either PCIe 3.0, 2.0 or 1.1 operations, the links also configure themselves for either graphics or server-class operations. In other words, the multiple links from the CPU (links A0, A2 and A3) can be utilized on a backplane as a single x16 PCIe electrical link, two x8 links, or one x8 and two x4 links. The CPU’s x4 links can train down to x1 links, but cannot bifurcate into multiple x1 links. PCIe link B0 comes from the board’s PCH and is a x4 PCIe 3.0 interface. **NOTE:** PCIe 3.0 support is dependent on several variables, including target card type and tolerances. Contact Trenton Systems for more information on PCIe 3.0 support.

PICMG 1.3 BACKPLANE USAGE WITH THE TKL8255

The TKL8255 combo-class, PICMG 1.3 system host board supports the standard’s optional SHB-to-backplane USB (4) and Gigabit Ethernet (1) interfaces. Both 3rd party industry standard PICMG 1.3 backplanes as well as a variety of Trenton backplanes are compatible with the TKL8255 including the Trenton BPG8194, BPG8155, and the BPG8032. There are several backplanes Trenton does not recommend for use on the TKL8255. See [Tech Info – Trenton PICMG 1.3 Backplanes Compatible with the TKL8255 on-line document](#).

POWER CONNECTION

The PICMG® 1.3 specification supports soft power control signals via the Advanced Configuration and Power Interface (ACPI). The TKL8255 supports these signals, controlled by the ACPI and are used to implement various sleep modes. When control signals are implemented, the type of ATX or EPS power supply used and the operating system software will dictate how system power should connect to the SHB. It is critical that the correct method be used. Refer to the *Power Connection* section in the TKL8255 manual to determine the method that will work with your specific system design. The *Advanced Setup* chapter in the manual contains the ACPI BIOS settings.

SATA RAID OPERATION (WINDOWS O/S SETUP)

The Intel® C236 Platform Controller Hub (PCH) used on the SHB features Intel® Rapid Storage Technology (Intel® RST) and requires unique drivers. A [zip file](#) is available on the Trenton Systems website to help you configure the SATA ports as RAID drives connected to the TKL8255 while taking advantage of the PCH's drive array management.

If you would like your system to provide you with an immediate notification of a failed drive in the RAID array then the "Hot Plug" setting on the Advanced/SATA TKL8255 BIOS screen needs to be ENABLED for each drive in the array. If this BIOS setting is DISABLED a drive failure, notification alert may take several minutes or even longer if there is no hard drive activity on the RAID array.

DISPLAYPORT AND DVI-D

The TKL8255 offers both a Display Port and two, DVI-D video interfaces. The DisplayPort is a vertical port mounted directly on the SHB at the I/O bracket. The DVI-D ports are located on the board. These ports are useful in system designs that incorporate a flat panel LCD display directly into the system enclosure. Contact Trenton Systems for information on routing the internal DVI-D connections outside of a chassis. The ports may run simultaneously; however, the specific dual monitor implementation is a function of the system's operating system and video driver parameters. Like the SATA RAID, file a [TKL8255 video driver file](#) is available under the DOWNLOADS tab of the [TKL8255 product detail webpage](#).

REALTEK AL262 HD AUDIO CODEC

Onboard audio capability on the TKL8255 is provided by the Realtek AL262 HD Audio Codec. An onboard header (P38) is provided to connect to the audio codec. Use Trenton part # 92-00677700 to provide 1/8" audio jacks to a standard I/O bracket. This board provides Line In, Line Out and Microphone connections. The driver can be [downloaded from this link](#).

INTEL® vPRO™

The TKL8255 is Intel® vPro™ technology enabled for select processors. vPro™ provides administrators with additional management capabilities that aid in threat management, encryption and remote administration. The Intel [Management Engine drivers](#) must be installed for these features to function. Contact Trenton Systems Support for specific application requirements for vPro™.

BIOS

The TKL8255 features the Aptio® BIOS from American Megatrends, Inc. (AMI) with a ROM-resident setup utility called the Aptio Text Setup Environment or TSE. Details of the Aptio TSE are provided in the separate *TKL8255 BIOS Technical Reference* manual.

OPERATING SYSTEMS

Trenton Systems has successfully tested the TKL8255 system host board with a wide variety of contemporary operating systems including Linux (Red Hat RHEL, Centos and SUSE), Windows® 8.1, Windows® 10, Windows® 2012 Server, and Windows® 2016 Server. Legacy 32-bit operating systems are not supported on the TKL8255. [See this application note for specific operating system compatibility](#).

Note: Trenton Systems does not recommend Windows® 7 or Windows® Server 2008 for use with the TKL8255 as Intel® "Greenlow" architecture limitations prevent full hardware functionality.

FOR MORE INFORMATION

Refer to the appropriate sections *TKL8255 Hardware Technical Reference Manual*. The BIOS and hardware technical reference manuals are available under the **Downloads** tab on the [TKL8255 web page](#).