



White Paper

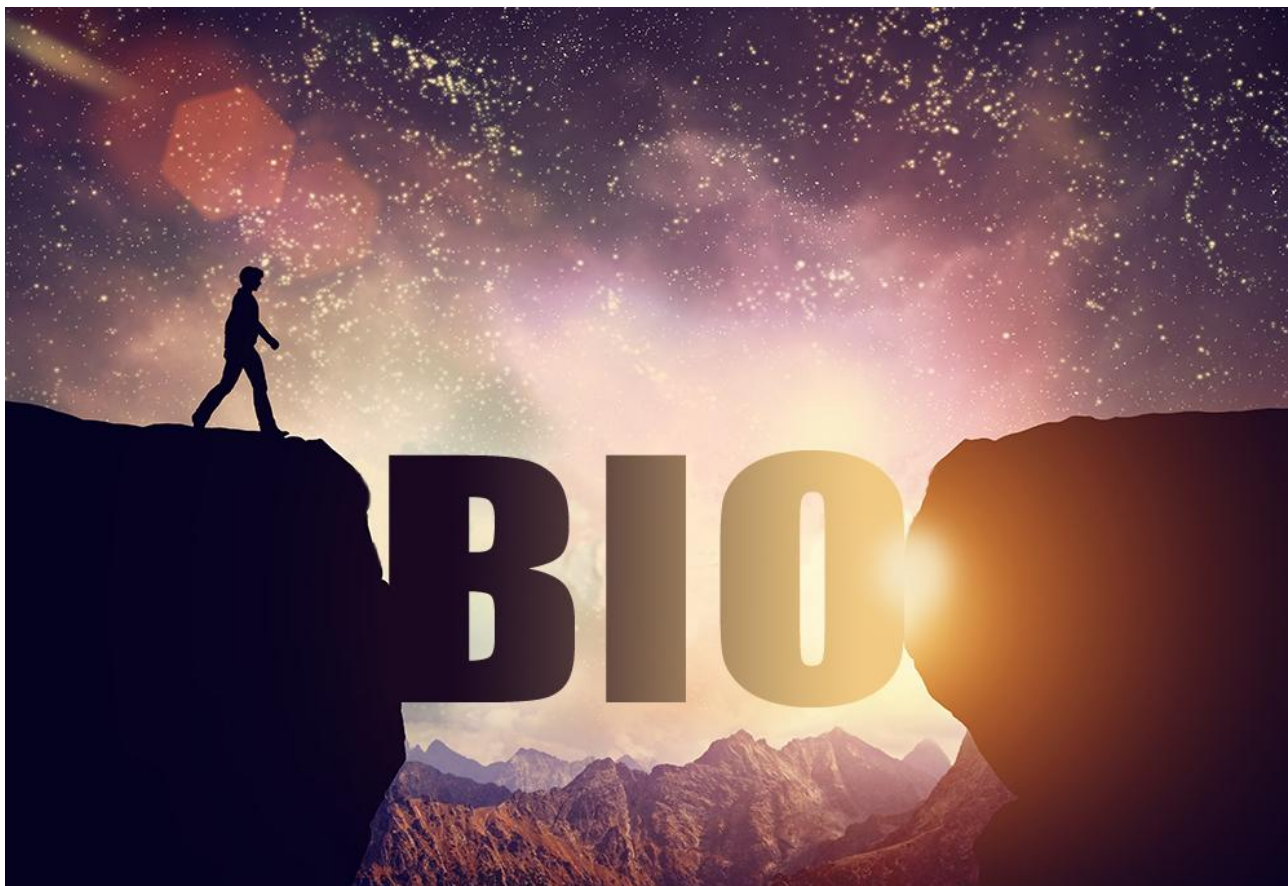
# AAEON BIO Interface: Three Ways How Customization Just Got Simpler

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## Overview



For providers/manufacturers of solutions, the ability to cater their products to the specific requirements of each and every application, and doing it timely and resourcefully, becomes part of their bread and butter.

Many of these companies attempt to accomplish this through customization, which can turn into a tedious and time-consuming process without the correct foundation. However, even if clear requirements are laid out, the process may very often involve stripping the original offering down to its individual components and reassembling it to its required specification. Lengthy testing and monitoring are ensued to ensure a complete, fault-free delivery.

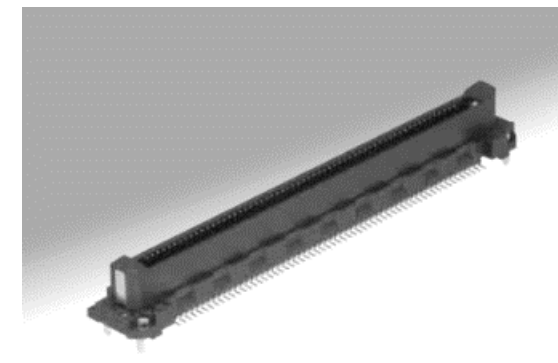
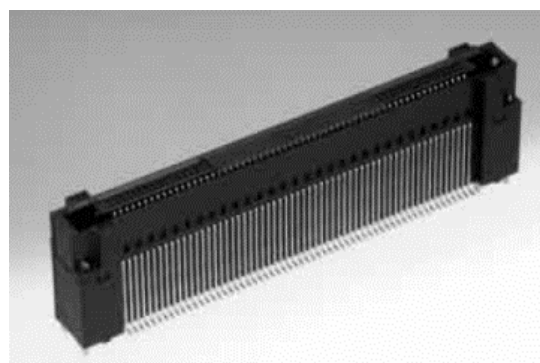
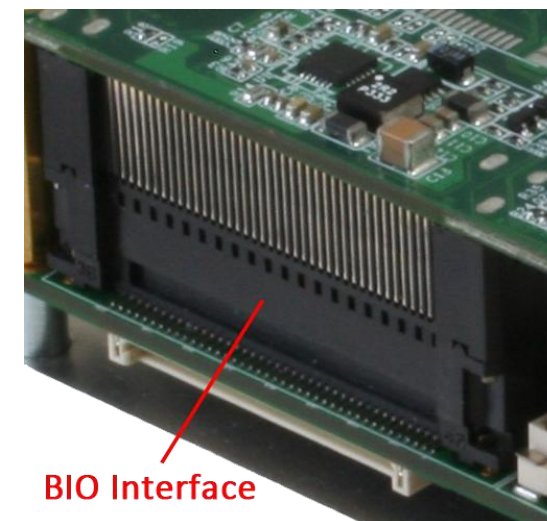
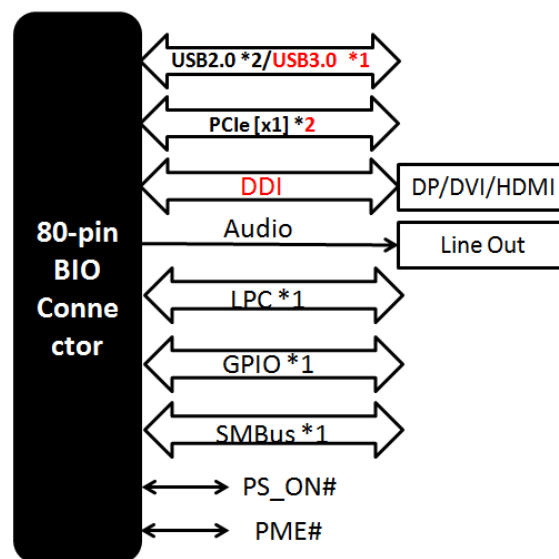
With years of experience in customization and full acknowledgement of the labor and time involved, AAEON has come up with a proprietary interface that may achieve the same purpose with minimum resources, and this White Paper will shed more light into this new hardware.

## AAEON's BIO Interface

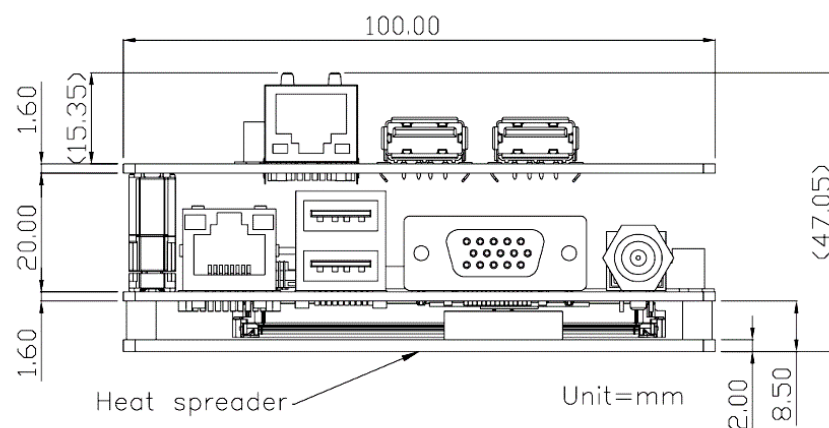
Referred to as the BIO interface (not to be confused with BIOS), which stands for board-to-board I/O connector, this 80-pin connector incorporates a variety of commonly used signals such as USB 2.0/3.0, DDI, Audio, and GPIO and works just like a PCI or any other expansion slots. This allows users to implement their desired features without having to invest heavily towards R&D.

When users need more from the base (mother) board, simply select the features that are additionally needed for a daughter board, connect the new board with the original board via the BIO interface and everything is set to go, no fuss, no muss.

The appearance of the daughter board may lead to questions about its unconventional shapes. And also how this oddly shaped card and this small interface is going to help with building the ideal system. These questions will be answered in the sections below.



## Saving Resources



As mentioned previously, it is important for the customization to be carried out in the most time and resource-conscious manner to reduce cost to the provider/ manufacturer. The BIO interface is the brainchild of that idea, serving to eliminate the unnecessary resources into bringing a customized product up to speed through various designs.

The first of which is the physical size of the connector and the daughterboard; the former measures 44 mm in length, 20 mm in height while the latter features different board shapes to ensure compactness. The distinctive shapes are purposefully designed for maximizing space otherwise impossible for conventional rectangular boards, as at least 2 boards can be fitted within the same area.

Second is the adoption of a cableless design. By excluding cables, the board looks much neater and makes maintenance easier. Also, as the boards are not connected with wires, it brings about another advantage which will be discussed next.

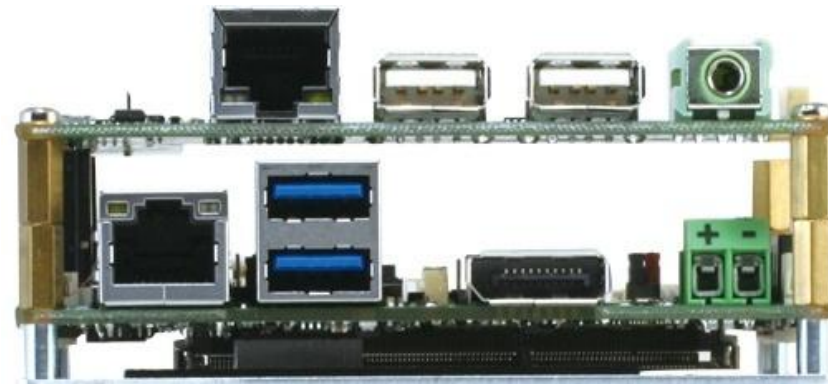
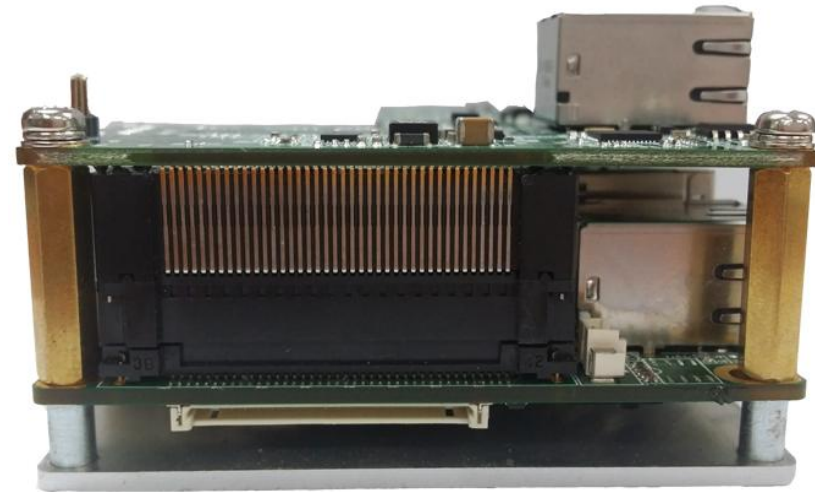




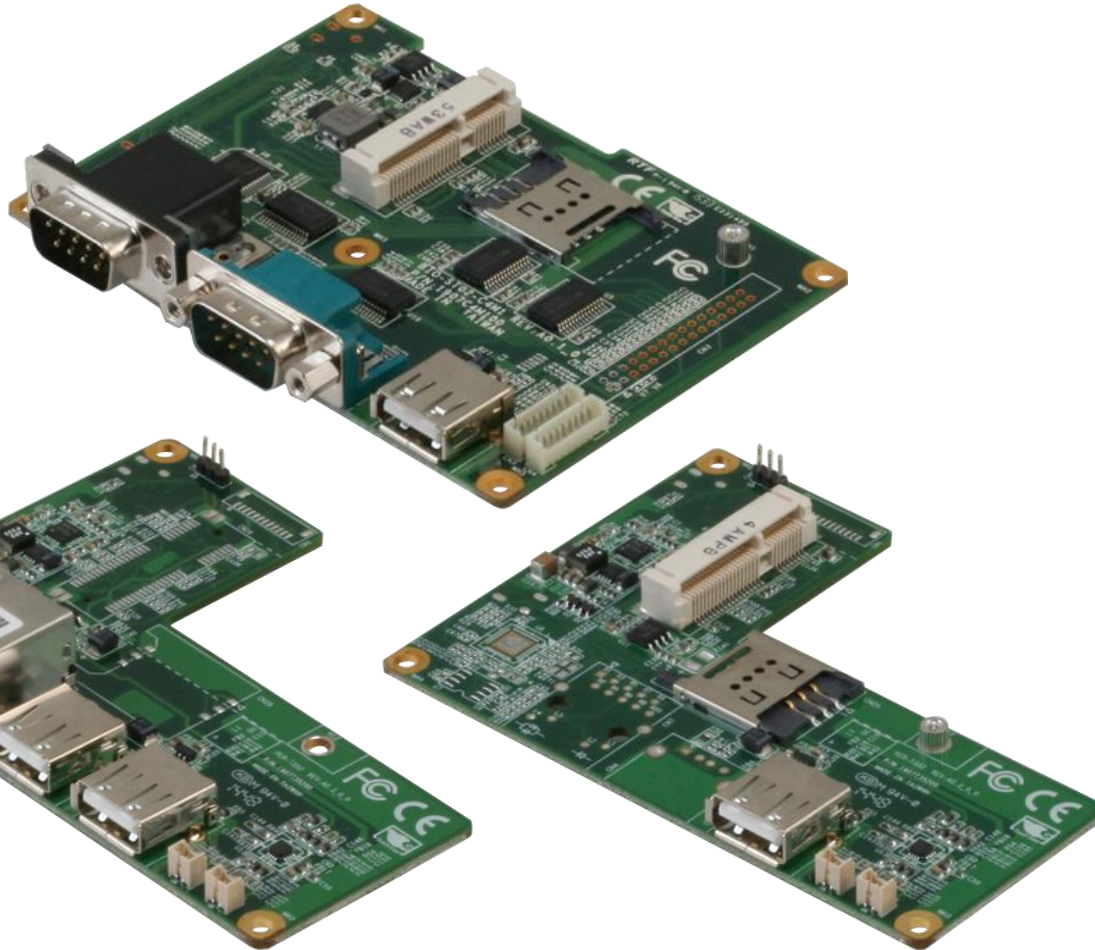
## Increasing Stability

With the BIO interface, stability is assured in two aspects, physical and functional. The former is catered for with a sturdy connector that offers better protection against motions and vibrations than wired connections; the latter through standardized hardware, as products designed to carry the interface use the same hardware and signals for communications, completely stamping out any conflicts.

In addition, all BIO interface-equipped products are tested on the same platform as the customer's to make sure it is bug-free before shipping.



## Saving Resources



Like the base (mother) board, the daughter board is likewise open to customization to the customer's requirements.

Whether you need more I/O ports for more peripherals, additional display options for more vivid media presentations, extending the life of your hardware through upgrades, or even giving your hardware more protection against the elements, AAEON will work closely with the customer and see to it that their requests are fulfilled.

## Success Story – Railway Defect Detection & Monitoring System

Given the compactness and versatility of the interface, a customer in China took full leverage of these characteristics and applied it on one of the most crucial and physically demanding tasks of the transportation industry- railway tracks defect detection and monitoring system.

Being used in an underground setting, it is the system's ability to take on the adverse environmental conditions that makes it a viable option for this application. In addition, the system has to be robust enough to receive multiple inputs, such as sensors, detectors, and video cameras, and expand (or upgrade) as required while remaining small and manageable.

The product, the PICO-BT01 in combination with the BIO interface, satisfy the abovementioned requirement with its small factor, which measures 100 x 72 mm. Thanks to the BIO interface, even with a BIO daughterboard on, there is only a 20 mm increase in the system's overall height while both length and breadth remains unchanged. Different capabilities can thus be offered in form of BIO daughter boards within the same area as before, realizing compactness in a confined space.

With the BIO interface, the connection between the main board and the daughterboard can be strengthened in an area constantly subjected to strong vibrations, a huge plus in reducing maintenance efforts due to loose connections. The boards themselves are specially customized by AAEON to work in a wide range of temperatures to prepare it for the large sway in temperatures between summer and winter months, which can intensify in places as enclosed as tunnels.

Besides reliable hardware, AAEON offers comprehensive software through the abovementioned customization and also expedited delivery of workable samples, which, for this project, takes approximately 4 weeks.



## Conclusion

Customization, while attractive to customers, can be a major hurdle while attempting to have the targeted product up and running reliably and quickly. With the BIO interface, customers can expect to make their desired product a reality, without any hassle and trouble.

## About AAEON

AAEON is a leading manufacturer of advanced industrial and embedded computing platforms. Committed to innovative engineering, AAEON provides integrated solutions, hardware and services for premier OEM/ODMs and system integrators worldwide. Reliable and high quality computing platforms include industrial motherboards and systems, industrial displays, rugged tablets, PC/104 modules, PICMG half-size and full-size boards and COM modules, embedded SBCs, embedded controllers and related accessories. AAEON also offers customized end-to-end services from initial product conceptualization and product development on through to volume manufacturing and after-sales service programs. AAEON is a GSA contract holder (#GS-35F-0470Y) serving the Federal, State & Local government sectors. AAEON is also an Associate member of the Intel® Internet of Things Solutions Alliance. From modular components to market-ready systems, Intel and the 250+ global member companies of the Intel Internet of Things Solutions Alliance provide scalable, interoperable solutions that accelerate deployment of intelligent devices and end-to-end analytics. Close collaboration with Intel enables Alliance members to innovate with the latest technologies, helping developers deliver first-to-market solutions.

