

## Q&A

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# TE Connectivity's Egbert Stellinga Discusses USB 3.1

**U**SB 3.0 is found on most new motherboards and mobile devices. It provides significantly higher throughput and more functionality than USB 2. Also, USB 3 provides backward compatibility with USB 2.0 in terms of connectors, though it hides additional connections. There have been new USB 3 connectors as well, but they tend to be larger than the USB 2 connectors.

The USB 3.1 connector supports this higher-speed interface, and TE Connectivity (TE) is supplying devices in this new format. Egbert Stellinga, product manager with TE Consumer Devices, has been with the company for almost 20 years.

**WONG:** Why is there a new USB 3.1 connector?

**STELLINGA:** We see a few trends in mobile devices: increased data speed, increased charging power even beyond 5 A, and integration of video capabilities into the device. Other than USB 3.1 standard connectors, the HSMIO (high-speed multi-I/O) connector from TE can combine all of these features in one connector (see the figure). In addition, the USB 3.1 standard connector is designed similar to what we call the sidecar connector. It is a double-size connector with two plugs next to each other. TE's innovation drove a solution that captures all of the above into a micro USB 2.0-sized connector. The ultimate result provides USB 3.1 data speed and power charging plus video in a micro USB 2.0-sized connector.

**WONG:** What advantages does the HSMIO connector have over existing connectors?



TE Connectivity's new HSMIO connector provides USB 3.1 performance in a Micro USB 2.0 form factor.

**STELLINGA:** Our product is one of the industry's first high-speed multi-I/O connectors that transfers USB 3.1 signals in a micro USB 2.0 form factor. It handles data up to 10 Gbits/s supporting USB 3.1 Super-Speed and 3-A power delivery, but all in a smaller, micro USB 2.0-sized interface. Because of this ability to maintain high performance in this smaller size, our new product addresses the growing demand for mobile devices to have more increased functionality, higher speed, and larger screens that require high-power battery

consumption. Meanwhile, the connector's small size, compatibility, durability, and improved electromagnetic interference (EMI) performance also present key advantages for use in small-size, battery-operated portable devices such as mobile phones, tablets, digital cameras, navigation devices, media players, and wearable devices.

**WONG:** What challenges or issues did TE encounter when designing the connectors, and how were they addressed?

**STELLINGA:** In particular, the high-speed design and protection against EMI (electromagnetic interference) challenged our engineering team. Supporting the USB 3.1 standard requirement of 10 Gbits/s required extensive simulation and testing. Also, the EMI leakage of the USB signals required a particular construction of the shells in the cable assembly.

**WONG:** What advantages does TE's solution provide?

**STELLINGA:** TE is committed to delivering extraordinary customer experiences. We strive to deliver miniaturization solutions that will help mobile device manufacturers create smaller, thinner, and lighter products. With an extensive global manufacturing footprint and product breadth, TE has a full range of the latest technologies to support consumer electronics applications. A prime example is the newly launched HSMIO connector. For details, see [www.te.com/en/product-launch/slim-solution.html](http://www.te.com/en/product-launch/slim-solution.html).