



SLIM SOLUTIONS

# HIGH SPEED MULTI I/O

NOW YOU DON'T NEED TO CHOOSE  
BETWEEN SIZE AND SPEED

QUICK REFERENCE GUIDE

# HIGH SPEED MULTI INPUT / OUTPUT CONNECTORS

Mobile devices are driving innovation in the consumer market. Increasingly complex, thinner devices with external display connections, larger screens, rapid charging and faster data rates are typical features of today's leading edge mobile devices. The rapid change in requirements demands parallel innovation in connector solution design.

Combining all future connectivity needs in a single Micro USB 2.0 form factor, TE's High Speed Multi I/O (HSMIO) product provides several industry-defined, value-added features including rapid charging (according to electrical requirements of Micro USB power delivery at 3A), higher speed up to 10Gb/s (USB 3.1 standard), external display connectivity including Mobility DisplayPort™ (MyDP) or Mobile High-Definition Link (MHL®) capability, and backwards compatibility to Micro USB 2.0.

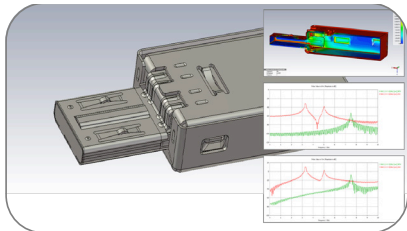
## Applications

- Smartphones
- Digital Cameras
- Navigations
- Tablets
- Portable Storages
- Wearables

## Optimised for High Speed (10Gb/s)

TE Connectivity has optimized the plug and receptacle side as well as the cable assembly in order to be able to transfer USB3.1 signals at up to 10Gb/s. Design enhancements have been introduced to help address EMI concerns associated with antenna interference while running USB3.0 signals.

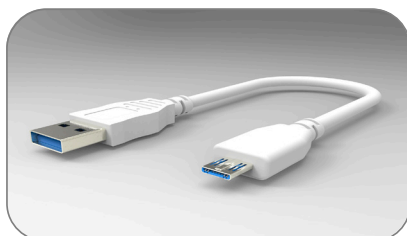
- Improved EMI performance reduces the interference by -30 dB compared with TE Connectivity's standard Micro USB in the functional mobile frequency bands (700MHz - 4GHz).



## Cable Assemblies

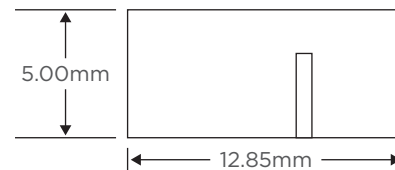
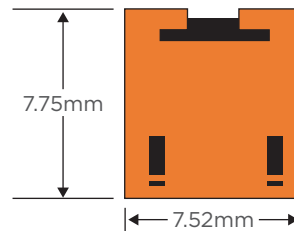
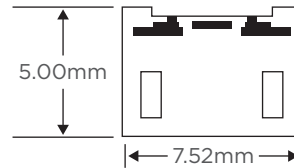
TE Connectivity provides standard cable assemblies or customized to your requirements:

- Connector of choice on both cable ends
- Customizable cable build up and wide variety of colors
- Optimized high speed performance due to propriety cable construction
- Customized covers / over molding. Type 1 aesthetic covers possible
- Active cables also possible e.g. MHL > HDMI

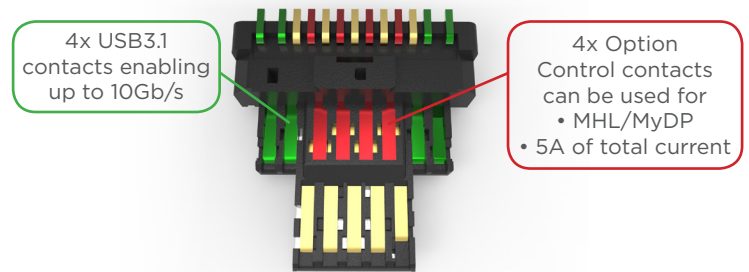


## Key Features

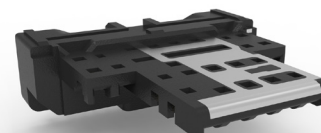
- Backwards Compatible to Micro USB2.0 plug
- Similar size requirement as Micro USB2.0 plug



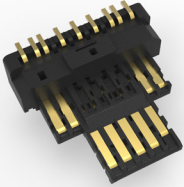
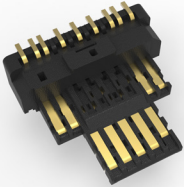
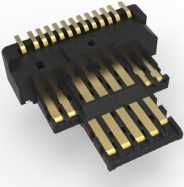
- Meets USB3.1 speed requirements at 10Gb/s
- USB PD (Power Delivery) capable at 3A, max 20V according to USB PD specification
- Optional additional power or MHL/MyDP contacts allow for running either 5A of power or video signals through 4 additional dedicated contacts:





- Reinforcement plate to avoid damage to receptacle during abuse situations:



## Receptacle Variants

	<b>5+4 USB3.0: USB2.0 + USB3.0</b> <ul style="list-style-type: none"> <li>• Backwards compatible to USB2.0 plugs</li> <li>• Can handle USB3.1 speeds up to 10Gb/s</li> <li>• 3A of power through Vbus and GND contacts</li> <li>• Same keying as the video 5+8 variant</li> </ul>
	<b>5+4 POWER: 5A OF CHARGING POWER</b> <ul style="list-style-type: none"> <li>• Backwards compatible to USB2.0 plugs</li> <li>• Can handle USB3.1 speeds up to 10Gb/s</li> <li>• 3A of power through Vbus and GND contacts</li> <li>• 2A additional current through optional control contacts</li> <li>• Special keying preventing cross mating</li> </ul>
	<b>5+8 VIDEO: MHL OR MyDP VIDEO THROUGH DEDICATED CONTACTS</b> <ul style="list-style-type: none"> <li>• Backwards compatible to USB2.0 plugs</li> <li>• Can handle USB3.1 speeds up to 10Gb/s</li> <li>• 3A of power through Vbus and GND contacts</li> <li>• MHL or MyDP video through 4 additional contacts</li> <li>• Special keying preventing cross mating</li> </ul>

## Plug Variants

	<b>PCB MOUNTING</b> <ul style="list-style-type: none"> <li>• Backwards compatible to USB2.0 plugs</li> <li>• Can handle USB3.1 speeds up to 10Gb/s</li> <li>• 3A of power through Vbus and GND contacts</li> <li>• 2A additional current through optional control contacts</li> <li>• Special keying preventing cross mating</li> </ul>
	<b>WIRE MOUNTING</b> <ul style="list-style-type: none"> <li>• Backwards compatible to USB2.0 plugs</li> <li>• Can handle USB3.1 speeds up to 10Gb/s</li> <li>• 3A of power through Vbus and GND contacts</li> <li>• 2A additional current through optional control contacts</li> <li>• Special keying preventing cross mating</li> </ul>

## Comparison Matrix

	USB2.0 Signal 480 Mb/s	USB3.1 Signal 10Gb/s	USB Power Delivery 3A	MHL	5A of Charging Power
Micro USB2.0	V	X	Option	Duplexing	X
Micro USB3.0/3.1	V	V	Option	Duplexing	X
HSMIO 5+4 Standard	V	V	V	Duplexing	X
HSMIO 5+8 Power	V	V	V	Duplexing	V
HSMIO 5+8 Video	V	V	V	Dedicated*	X
5+6 Multi IO	V	X	X	Dedicated*	X

\*Over dedicated contacts

## Selection Matrix

Receptacle or Plug	Mounting	Variant	Part Number
Receptacle	Standard on board	5+4 USB3.0	1-2199296-1
		Power	TBA
		Video	2199296-1
	Offset 1mm	5+4 USB3.0	TBA
		Power	TBA
		Video	2199183-1
	Reversed offset 0.86mm	5+4 USB3.0	TBA
		Power	TBA
		Video	2199238-1
Plug	PCB mounting	5+4 USB3.0	TBA
	Wire mounting	5+4 USB3.0	2-2199225-3
	PCB mounting	Power	TBA
		Power	TBA
	PCB mounting	Video	2-2199225-2
		Wire mounting	Video

## Frequently Asked Questions

- **Can a HSMIO plug be inserted into a Micro USB 2.0 or 3.0 receptacle?**

No. There is a rib on the plug preventing it from being inserted into a normal Micro USB slot.

- **If I use the HSMIO plug for my application, can I use my own pin assignment?**

There will be several customers using the same connector. This means in the market there will be a risk for cross mating. If you deviate from the pin assignment, TE asks you to contact TE upfront. There might be an opportunity to make a special keying for your application.

- **Is the HSMIO connector USB PD capable?**

Yes the HSMIO plug and receptacle connector pair can handle up to 3A of current through the USB assigned Vbus and GND contact. In case there is a need for additional power, additional contacts can be assigned carrying up to 2A of extra power.

- **My application requires another offset, can TE support this?**

The tooling we have built for HSMIO is flexible. This means we can make offset variations as well as other variations such as with or w/o flange, reversed / standard mounting etc. within the same platform. Please contact your TE representative for more information.

- **Can you send me the product specifications as well as the test specifications?**

There is a variety of information available on the web [[te.com/products/HSMIO](http://te.com/products/HSMIO)]. In case the information you are looking for is not available, please contact your local sales representative.



## FOR MORE INFORMATION

Email Enquiry: [HSMIO@te.com](mailto:HSMIO@te.com)

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For other country numbers, go to [te.com/supportcenter](http://te.com/supportcenter)

Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.

\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

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