



Shielded Interconnect Technology Keeps Pace with Medical Device Community

By Tom Kannally, Hypertronics Medical industry Manager | Thursday, October 7, 2010

As medical devices are required to transmit more and more critical data, a higher degree of protective shielding is now being called for by the medical industry. The good news is found in the fact that connector vendors are hearing and indeed responding to this call with a collective sense of urgency and purpose in their efforts to develop and deliver what is needed. And what is needed, and what do the key concerns entail? Clearly, safety, as well as the protection of data from corruption, are at the top of the list of needs which are of critical importance. Additionally, though certainly not a life-critical concern, medical devices in today's theater of operation must also be designed with a keen eye towards their cosmetic appearance and aesthetic value. Plastic outer body connectors are the preference of the medical community because their look fits better in devices designed for a hospital environment, so the required shielding must be inside the connector.

Separate and apart from aesthetics, safe and reliable circuit connections through [electrical](#) connectors represents a key ingredient in the recipe for ensuring the dependability of vitally important medical devices in scenarios which can, in certain cases, be life-critical in nature. Be it in an operating room, in the physician's examining room, or in a home healthcare environment, innovative connector products from a host of [interconnect](#) technology providers, Hypertronics Corporation among them, are leading the way in the medical device arena.

Drilling down a bit deeper into the well of mandatory design needs, one finds that, in the grand scheme of things, interconnect technology is indeed that often unheralded component that continues to play an increasingly larger role in the evolving array of requirements associated with medical devices. As such, one of the sobering realities of competing successfully in today's increasingly competitive marketplace is seen in the rising tide of ever-changing requirements that are coming from medical device design engineers to connector manufacturers.

Such needs continually challenge the interconnect solutions providers to serve-up the customized connectors that are demanded. More than ever before, medical customers are seeking connectors that can operate flawlessly in challenging medical environments, and that offer enhanced performance at a competitive cost.

Another reality that dovetails into such requests is found in the fact that, as medical devices become much more sophisticated over time, the need for more reliable and durable interconnects also becomes more acute. The need to ensure signal integrity and protect sensitive medical device circuitry from damaging EMI and RFI interference is also paramount, and can be achieved by providing continuous shielding from the cable into the system. In addition, interconnect technology vendors are also striving to keep pace with other trends and changes in the industry such as the fact that, as the footprint of medical devices has become significantly smaller over time, connectors must follow suit.

One such interconnect solution is the Hypertronics HyperGrip series, a user-configurable plastic medical circular connector which is color-coded, can be keyed to provide true and secure connections on medical devices, and will soon be available in a shielded version, and a new smaller “mini” configuration that will add to the reliability of the Hypertac contact for which Hypertronics is well known.

Across the interconnect technology landscape, vendors are bringing to market connectors that are ideally suited for operating in sterile hospital environments. Connectors that are designed to meet the unique and challenging demands of the medical industry by designing-in the features and functionality required to make certain that the highest level of performance and quality are maintained across key disciplines that include homecare cardiac devices, patient monitoring, imaging, and electrophysiology catheter systems.

Increasingly, medical device manufacturers are now reaching out to connector providers to work closely with them to design interconnect systems that are easy to use, can be relied upon to work each and every time, and are designed to meet demanding medical requirements such as shielding, sealing (often up to IP67), finger-proofing, and resistance to sterilization protocols.

It will always be the case that reliability is of paramount importance in all real-world medical application scenarios, and shielded interconnect technology is indeed staying ahead of the market’s needs by developing innovative interconnect solutions, such as HyperGrip, which also embody simplicity of design, high mating cycle life, low insertion force, low contact resistance, shock and vibration immunity, and ease of use.

To reiterate, interconnect technology is today, in the grand design, an element all too often taken for granted, but that is increasingly playing a very large and important role in the steady evolution of sophisticated medical devices that are improving healthcare, and changing people’s lives for the better.

Tom Kannally is a Medical Industry Manager at Hypertronics Corporation, in Hudson, MA.