

WHAT IS STARSHIELD™ “ZERO LENGTH SHIELD TERMINATION?”

For decades, bundles of individually shielded cables have been used to solve many electrical system design issues from cross-talk to wire-routing/management and maintenance. These individual shields were frequently “pigtailed” by pulling the center conductors through the outer shield, or by soldering drain-wires to the shield, then terminating these pigtails or drain wires via a terminal lug to the cable-clamp on the back of the connector.

Pigtails or drain wires, suffer from several shortcomings. First, they force shield current to flow in an asymmetrical manner yielding higher transfer impedances. Second, and perhaps more importantly, the pigtail or drain-wire itself creates a “loop in the shield” or “standing antenna” effect. Coupled with the exposed lengths of unshielded wires, this condition acts as a receptor and/or radiator of noise. EMC performance will drop to unacceptable levels at higher frequencies dependent on the length of the pigtail. Over the years, more elegant methods of terminating pigtails or drain-wires have been developed that effectively shorten these lengths, however the underlying issue still exists—particularly in higher-bandwidth and less noise-tolerant applications which demand ever-shorter pigtail lengths for acceptable performance.

The best connection is one in which the individual shields are extended up to and make solid 360° connections to the backshell leaving no length of unshielded wires exposed outside of the ground plane. Effectively, this reduces the length of the pigtails or drain-wires to zero, and eliminates the standing antenna. Said another way, Zero Length Shield Termination may be achieved via a 360° termination of signal group shields (the individual shields over the wires or twisted pairs in a bundle) to an encapsulating ground in which no pigtails or drain wires are necessary to terminate the shields to the connector body or backshell.

Glenair’s StarShield “Zero Length Shield Termination” backshell methodology excludes pigtails or drain-wires altogether by providing termination platforms referred to as “ferrules” which allow individual shields to be terminated by a 360° solder connection in one easy process. The ferrules in-turn lock into a “star” that provide another 360° termination to the encapsulating ground plane of the backshell body. By eliminating the issues associated with pigtails or drain-wires, this system not only offers the highest level of EMC performance, but is also one of the most reliable, repairable individual shield termination methods on the market today.

