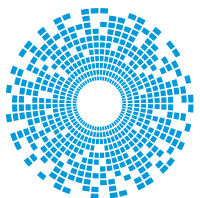
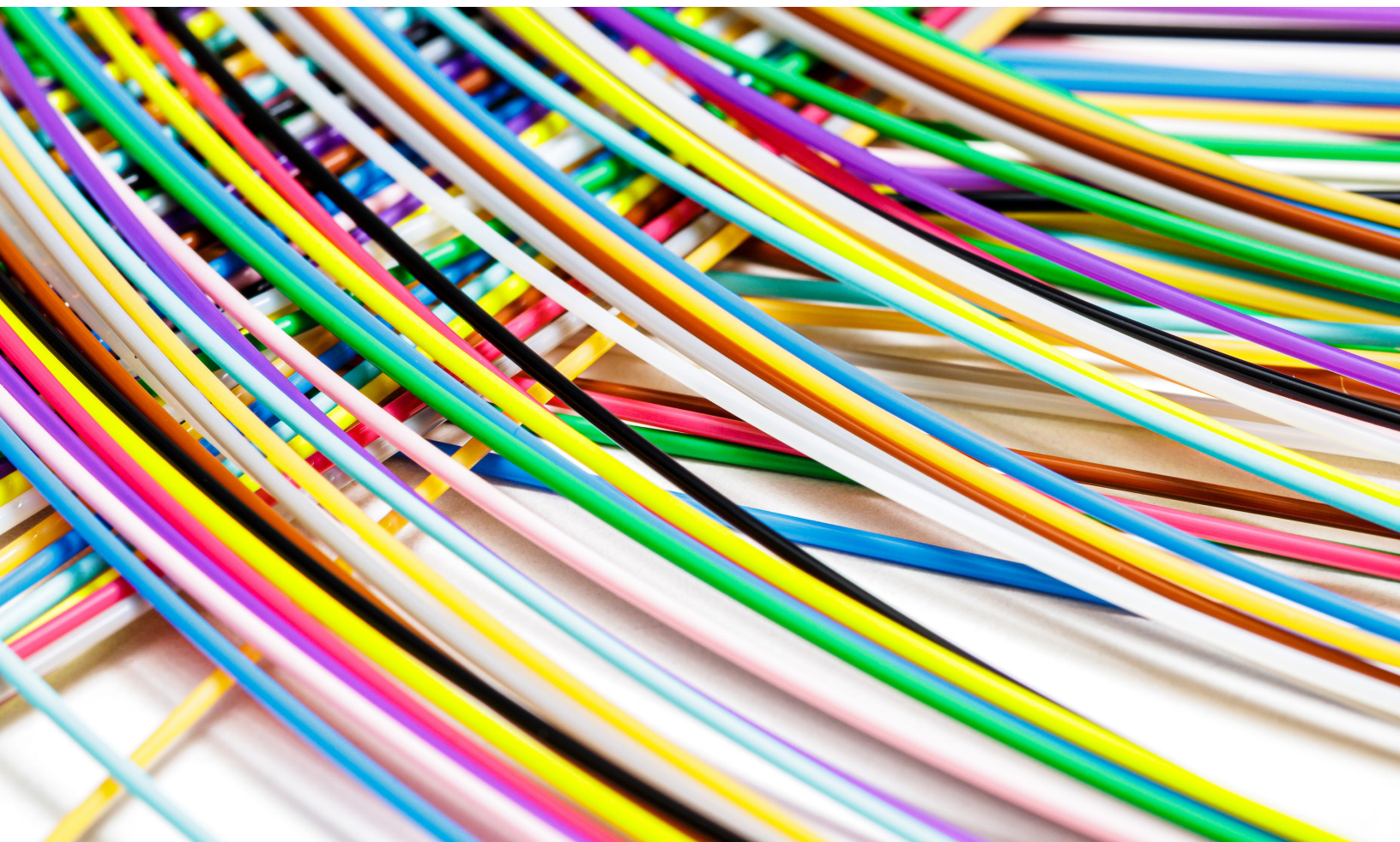


# Pluggable Transceiver Solutions for Harsh Environments



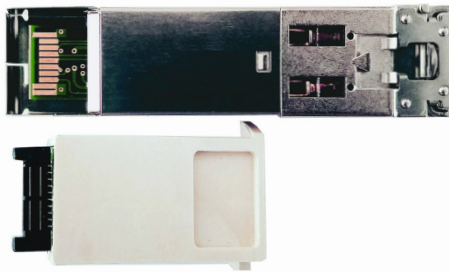
**cinch**  
CONNECTIVITY SOLUTIONS  
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*When designing a product for harsh environments and markets, such as military, aerospace and heavy industry, design engineers can feel restricted in what products and procedures they can use in order for the final product to match requirements.*

## HARSH ENVIRONMENT DESIGN SOLUTION

Building on the proven performance of Cinch's Low Rider family, Cinch has created a Front Load Pluggable transceiver family (FNx) to help fill the gap experienced by engineers. Our pluggable transceiver has a small foot print, high performance and excellent environmental characteristics, while at the same time, offering the flexibility and convenience of a pluggable product. And at half the size of a standard SFP, the FNx also allows designers more room on the application card.

*Figure 1:  
An overview and  
size comparison  
between a  
traditional SFP and  
the FNx.*



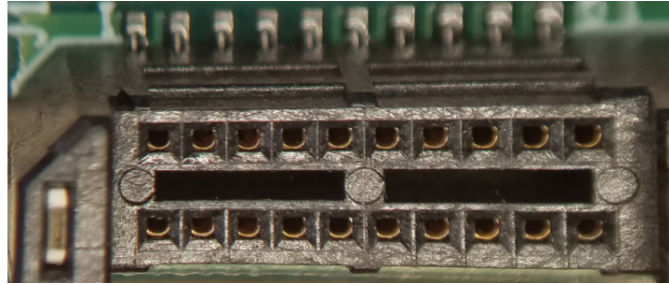
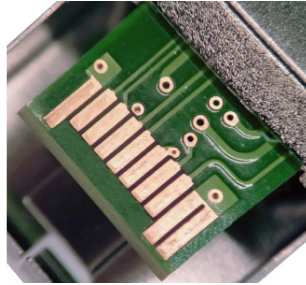
## ENHANCING PLUGGABLE TRANSCEIVER RELIABILITY

The main reason for pluggable transceivers not being used in rugged applications, is that the traditional boardedge contact is inherently sensitive to vibration and shock. In Cinch's FNx series of transceivers, true pin/socket contacts are used as part of the solution to this problem. Below in figure 2, a side by side comparison is made between these two different contact types, to show the difference. Both the pin and socket contact is plated with 50  $\mu$ -in of gold, guaranteeing performance over hundreds of mate/demate cycles and extending the life of the product.

A second area of concern for traditional pluggable transceivers is the bail latch used. Cinch's FNx series utilizes captive screws to fasten the transceiver to the cage, meaning a much more secure hold than the bail latch.

Users may prefer or need a SM or MM source for various reasons, such as performance, transmission length and existing hardware. Many times the transceiver used is the one

*Figure 2:  
Comparison  
between a  
traditional card  
edge connector  
and the pin/socket  
solution used in  
the FNx. The latter  
provides superior  
performance,  
especially over  
temperature and  
vibration.*



thing that limits a product to being SM or MM. Having the option to change out SM/MM, would open doors for multiple uses of the same hardware, and enable a product capable of interfacing with existing systems, or for future upgrades in the field.

It's not only the change between SM and MM that can be beneficial. Allowing the same platform to be used for a variety of communication speeds, further cements the pluggable transceiver as a practical and convenient option. From a manufacturers standpoint, a pluggable transceiver allows late configuration, and a singular design to fulfill multiple needs.

Additionally, optical transceivers are often sensitive to high temperature manufacturing processes, such as reflow ovens, but a pluggable design allows the transceiver to be added after the high temperature processing has completed, thereby simplifying the overall assembly process.

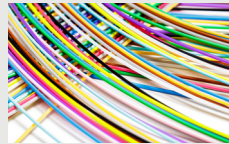
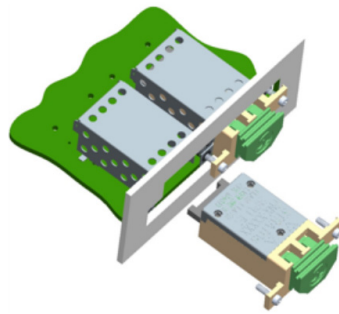
*Table 1:  
Some of the most  
interesting features  
of the FNx product  
family are listed  
below, together with  
a brief overview  
of the advantages  
gained.*

<b>Features</b>	<b>Benefits</b>
Small footprint	Half the size of a traditional SFP, more room on the application card.
Rugged, I-temp	Specifically targeted to Mil-Aero and rugged Industrial market -40°C - +85°C.
Pluggable	Allows late configuration and ease of field changes from MM to SM or to different data rates.
True Pin/Socket	As opposed to traditional card edge connector, providing superior vibration and temperature performance.
50 μ-in	As opposed to traditional card edge connector, providing superior vibration and temperature performance.
Gold contacts	Uses 50 μ-inches of gold plating on the pin and socket for high reliability lifetime use.
Captive Screw	Captive hardware secures the transceiver module in the cage over vibration, as opposed to traditional SFP which uses a single point of contact bail latch.
MM and SM	Same application card foot print, simply change transceiver module.
Data rates	Current family offering is 100M and 1G. Future modules are planned for 2G, 4G, and 10G.

## **FNX: FLEXIBILITY AND DURABILITY FOR HARSH ENVIRONMENTS**

With the release of Cinch's family of Front Load Pluggable transceivers, there is an option for designers to use a pluggable transceiver, even if their product is to be used in harsh environment. The use of a pluggable transceiver will add value to both manufacturer and customer, by offering flexibility during the assembly process and end use.

*Figure 3:  
Front load  
pluggable  
transceiver.*



***View Cinch's Family of  
Pluggable Transceivers***

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