

4 Critical Things to Keep in Mind when Choosing Your Supplier for Board Level Products



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Your job as a PCB designer is challenging, and you need to rely on suppliers to help bring your designs to market. It will be critical to keep in mind the following points when choosing your supplier:

1. **You need to know that a supplier will provide you continued support when selecting a product.**
2. **You need a broad portfolio to pick from to get the best solution.**
3. **You need a supplier who evolves products to meet the current market trends.**
4. **You need to rely on thorough testing through your supplier when a new product is launched.**

All of the above is the philosophy HARTING takes with its legacy board level line of DIN 41 612 connectors and new board-to-board, stackable *har-flex*® series.

The legacy DIN 41 612 – long life solution for industrial applications

DIN 41 612 connectors are cost effective, proven and reliable connectors that have been a standard for many decades. They offer a long service life – 20 years or more, often under harsh conditions - making them a highly trusted, long term solution.

The DIN 41 612 standard describes electrical connectors, usually used in rack systems, that have two or three rows of contacts with 16 or 32 columns per row. These connectors have a variety of pin counts depending on body type with a maximum of 96 contacts in 3 rows. DIN 41 612 was originally developed as an interconnect standard for telecom applications. The standard was then updated to IEC 60603-2.

The evolution of the legacy DIN 41 612 to a broad portfolio that increases flexibility for every designer

The popularity of DIN 41 612 led many other industries to demand variations that support their unique needs. Versions have been developed, which are complementary to the IEC 60603-2, expanding the capability of the DIN 41 612 family of products. HARTING, as the global choice in connectivity solutions for industrial markets, led this initiative through product enhancements and modifications that include complementary versions. This broadened their utility to other sectors, like rail transportation, factory automation, military systems, and medical devices.

This commitment to a broad portfolio allows these sectors to reap the benefits of reliability and cost effectiveness while addressing the specific needs of their applications. Some variant examples include:



DIN 41 612 has evolved to include complementary versions that broadened the range of applications and capabilities of the product line.

- NFF certified DIN 41 612 connectors to address safety requirements against flammability and gas emissions in rail cars.
- Rugged metal housings that offer high levels of EMI protection.
- “Through Hole Reflow” (THR) reduces processing costs on a board that requires both DIN 41 612 and SMT components. These versions are made from plastics that can tolerate higher temperatures and can be used during the same reflow step as SMT connectors.
- One-half and one-third variant sizes offer space savings.
- Hybrid versions which reduce the number of components on a board and save space by carrying power, coax, and signal in one connector.

Custom solutions can be the missing piece to a unique design

Sometimes specific applications call for a completely custom solution. HARTING has proven experience in developing customized solutions for not just DIN 41 612, but for connectivity solutions across all industrial industries as well. Within DIN 41 612 specific customized solutions include:

- Coatless zinc die-cast housings for train control modules with rail giant Bombardier.
- DIN 41 612 connectors with special flanges for use in a custom backplane (also manufactured by HARTING) for another rail leader, Alstom.

The future for DIN 41 612 is bright through continued support and growth

While Telecom industries have moved on to connectors with high speed capabilities, DIN 41 612 can reach speeds up to 3.125 Gb/s with selective pin assignments. This speed is adequate for applications in many industrial sectors, such as rail, military, and machinery.

HARTING sees a bright future for this connector series within the industrial marketplace for many years to come and will continue to support existing and future DIN 41 612 users.

Through continued and on-going investment, HARTING is committed to remaining the leader in DIN 41 612. Its customers can continue to incorporate DIN 41 612 into new products because HARTING will be there with the product and application support they need.

har-flex® – evolution to address market needs for miniaturization

Although DIN 41 612 connectors are perfectly suited for many applications, some engineers need miniaturized and stackable connectors. Beyond supporting the product lines many engineers have relied on for years with new variants, HARTING's true expertise lies in developing solutions that address current and future trends. The demand for miniaturization, plus the desire for the added functionality of mezzanine boards, has led to the development of finer pitched, stackable, SMT mountable connectors.

This connector, which HARTING calls its *har-flex®* series, is based on a 1.27 mm pitch and addresses the needs of a true mezzanine stackable, SMT mountable, high density connector. Designed with the industrial marketplace in mind, this connector offers the same benefits– robustness, reliability, and long-service life – as DIN 41 612. Though not designed as a true high speed connector, data rates of 6 Gb/s can be achieved.

har-flex® – reliable and proven through rigorous testing

Making the switch from a technology that has been used for decades to one that is newer can feel risky. Leading companies know this and address these concerns by upholding and testing to the same standards as the technologies PCB designers have relied on for so long. HARTING, for example, qualifies its *har-flex®* connectors to similar IEC specifications as DIN 41 612.

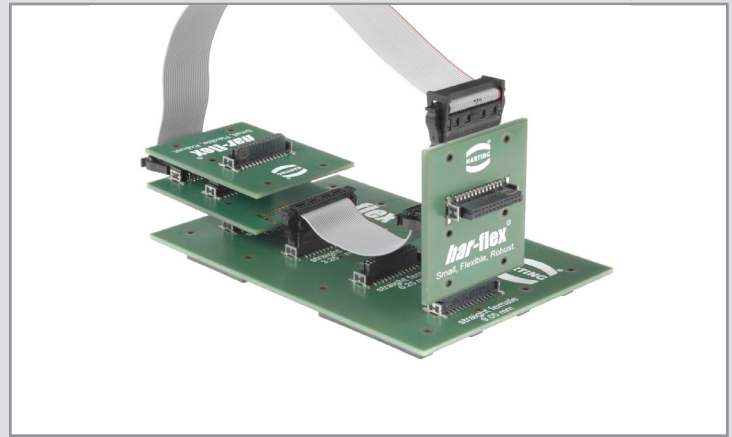
This includes:

- Vibration and shock testing to provide reliability assurance, such as in applications in the immediate vicinity of heavy machines or in rail vehicles.
- Developments to ensure mechanical stability, such as lateral hold-downs that guarantee a secure fixing to the board. This addresses one of the biggest concerns for a designer, the security of the SMT contacts mounted on the PCB pads.
- Special contact coating combined with a special stamping method to ensure to a smooth surface that minimizes wear during mating cycles.
- Contact quality is verified through exhaustive mating cycle tests that submit the connectors to up to 500 mating cycles including exposure to a corrosive gas.

All of these tests and considerations guarantee that if the PCB designer switches from a connector they have used for years to a newer technology, the result will be the same levels of quality and reliability.

har-flex® – The evolving series broadens your choices

Like DIN 41 612, HARTING continues to develop new *har-flex®* variants based on the evolving needs of its customers.



The *har-flex®* series is based on a 1.27 mm pitch and addresses the needs of a true mezzanine stackable, SMT mountable, high density connector.

The latest additions that are available now include:

- Self-assembly IDC cable connectors so customers can build their own custom-length cable assemblies.
- Connectors with pre-leading contacts that can protect sensitive electronics from damage during operational plugging and unplugging.
- New THR fixing variants provide an extra assurance of stability with THR using soldering studs for applications that expose PCBs to high mechanical stress. This takes the security of the SMT contacts to an even higher level, addressing applications where concerns over stress on the contacts demands that a through hole fixing feature is preferred. These THR fixing variants can be easily integrated into the automated assembly process of other SMT components.

The next step in this technology is the development of hybrid variants that also carry power.

DIN 41 612 and *har-flex®* series - the best of both worlds

HARTING's expansive DIN 41 612 portfolio combined with its new, highly tested *har-flex®* sends a clear message to the PCB designer – whatever your application, HARTING is here to support you, now and for the future.

Partnering with HARTING means less risk – you will know that the connector you buy today will be here tomorrow, and you can be confident that HARTING is constantly developing new solutions to support your new designs.



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