Creative
Interconnect
Solutions

FLEX PCB HARNESS

Compact, reliable
and fully customized
interconnection solutions

A **Flex PCB Harness** is a tailor-made interconnection solution combining **rigid PCB areas** and a **flexible section**, designed to ensure the electrical connection between different subsystems in mechanically constrained environments.

This architecture makes it possible to integrate **signals, power and connectors** into a single controlled structure, fully mastered end-to-end, providing **reliability, compactness and industrial repeatability.**

KEY STRENGTHS

Criteria	Benefits
Size & weight	**Compact, lightweight and ultra-thin flexible architecture** enabling significant reduction in volume and mass; ideal for high-density and embedded systems
Integration	**Easier integration** into complex architectures; circuit can **be bent**, **shaped** and conformed to mechanical constraints
Reliability	**Elimination of manual wiring** reduces assembly errors; excellent repeatability and long-term reliability
Vibration & Mechanical Resistance	Monolithic structure without loose wires provides **high resistance to vibrations and mechanical stresses**; suitable for harsh environments
Static & Dynamic Use	Designed for both static and dynamic applications requiring flexing or movement
Signal Integrity	**Controlled impedance routing available on request**; reduced signal losses, reflections and electromagnetic interference for high-speed / high-frequency signals
Design Freedom	Fully tailor-made solution including **stack-up, routing, connectors and integrated protections**
Industrialization	Controlled and mastered design and manufacturing process optimized for repeatable, automatable serial production
Cost Optimization	**Design-to-Cost and Design-for-Manufacturing** approach ensuring optimal balance between performance, manufacturability and cost

TYPICAL APPLICATIONS

Aeronautics & Space	Defense & military systems	Drones & embedded systems	High-performance automotive	Embedded industrial equipment

ARCHITECTURE & CONFIGURATIONS

Rigid-Flex PCB structure
Minimum configuration:
- 2 rigid parts
- 1 flexible part

Number of layers adaptable depending on :
- Routing density
- Number of signals
- Voltage and current levels
- Controlled impedance constraints

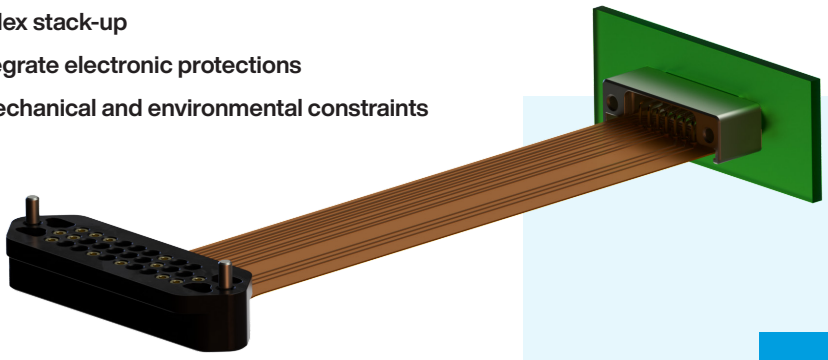
CONTROLLED IMPEDANCE (ON REQUEST)

Controlled impedance tracks make it possible to replicate the behavior of coaxial cables or twisted pairs directly on the PCB.

Improved signal integrity	Reduced losses and reflections	Reduced noise and interference

CUSTOMIZATION & OPTIONS

- Controlled impedance upon request
- Customer-selected connectors
- Specific rigid & flex stack-up
- Possibility to integrate electronic protections
- Adaptation to mechanical and environmental constraints



NICOMATIC ADVANTAGES

With proven expertise in interconnection and embedded electronics, we ensure full control over design, routing and industrialization through a single point of contact.

INDUSTRIAL PROCESS

1 Customer needs analysis

2 Electrical and mechanical design

3 Routing and verification

4 Connector manufacturing

5 PCB manufacturing and assembly

6 Tests and qualifications (if required)

7 Prototype and serial delivery

The Nicomatic Group Flex PCB Harnesses provide compact, reliable and fully customized interconnection solutions for the most demanding embedded systems.

Find support at your local Nicomatic Office

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