WHAT'S TRENDING

# Flexible Circuit Solutions for the Medical Market

## Are your product designs optimized to meet emerging medical device requirements?

### SITUATION

The medical durable equipment market is growing – predictive medical practices rely on early-detection diagnostic equipment, supported by connected-health devices for at-home monitoring, all poised to greatly impact patients' healthcare outcomes.

Diagnostic equipment performance capabilities now demand better image resolution, improved detection rates, tighter location accuracy and an overall improvement in proper health assessment decisions.

As diagnostic, therapeutic and monitoring devices continue to merge, manufacturers will need to engage increasingly complex and differentiated supply chains to remain compliant with governmental and industry standards. Designs must have high reliability, requiring sourcing to maintain component and material supplies for the entire product life cycle.

Flexible printed circuits (FPCs) and flat flexible cables(FFCs) will become differentiators, making electronic interconnection simpler and more reliable. FPC/FFC interconnects often are used in applications where high signal speed, power distribution, heat, flexibility or space savings are an issue. In these situations, FPCs/FFCs offer options that printed circuit boards (PCBs) simply cannot.

### TREND 1:
### Smaller Form Factors, Fine-Line Density and Dynamic Movement

- Smaller form factors – Medical device requirements are requiring tighter circuitry densities and feature registration.
- Fine-line density – Demand for space savings with increased internal density will drive shifts from wire-to-board (WTB) or flex-to-board (FTB) to integrated flexible solutions.
- Dynamic movement – Electrical interconnects need to remain durable and provide freedom of movement for repetitive bending-flexing applications.

### TREND 2:
### Higher Data Rates, Increased I/O Signals

- Increased data rates and signals requires addressing a combination of high-speed signal integrity, power transmission, EMI protection and high-voltage isolation.
- The drive to smaller, high-speed packages with increased I/O demands fewer mechanical interconnects and multidimensional routability.

### TREND 3:
### Increasing Cleanliness and Quality Expectations

- Medical products must meet high cleanliness standards and durability requirements to withstand stringent cleaning, starting at the manufacturing stage through end-user cleaning.
- Enhanced medical product designs require suppliers to use the right constructions and materials to meet more stringent industry and governing body standards.
- Manufacturing and product quality require tighter control of processes, document control, and improved manufacturing systems that provide traceability and device history data management.

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WHAT'S TRENDING

# Custom Circuitry for Flexibility and Functionality

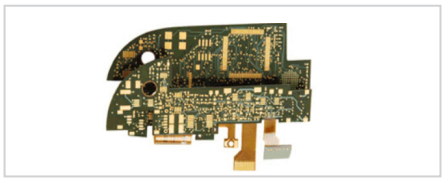
Flexible circuit technology, FPC sand FFCs are the answer for your most challenging interconnect applications.

Expansion of medical device functionality, from in-hospital to remote at-home equipment, is driving the need for highly reliable, compact and functional FFC/FPC solutions.

Custom circuitry can provide engineers and designers with the creativity, functionality and reliability needed to meet growing medical device design requirements. A reliable design and manufacturing partner offers component reliability and better sourcing to maintain  a steady material supply chain.

## TOTAL INTERCONNECT SOLUTIONS

Molex provides expertise in the design and  manufacturing of flexible circuitry for medical applications. From simple to complex and from small to large, Molex's lightweight and robust flexible products can meet the requirements of medical device applications from surgical tools to diagnostic equipment.



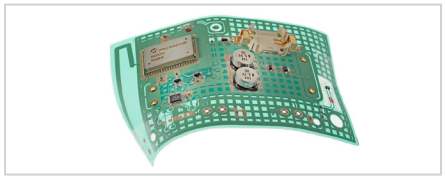
**Copper Flex Circuits**
*Maximum Performance for Demanding Applications*

Ideal for applications that require dense circuity, higher currents, and minimal high-speed signal loss.

High layer count and ability to handle tight bends and folds make copper flex circuits ideal for high-shock and vibration environments.

FPCs ideally meet the dual and oftentimes competing requirements of electrical and mechanical specifications.

**Copper Flex Product Capabilities**



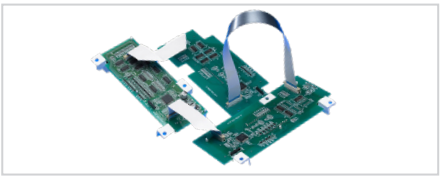
**Silver Flex Circuits**
*Flexible Solutions for Low-Power Applications*

Ideal for low-power and low-signal applications where space is a premium.

Well-suited for applications for sensors and controls including instrument panels, smart surfaces and lighting.

Smaller, lighter and cost-effective, silver flexible circuits are an environmentally friendly choice for applications that demand flexible, lightweight and smaller form factors.

**Silver Flex Product Capabilities**



**Premo-Flex**
*Standard and Custom 1:1 Flat Flexible Cables*

Ideal for board-to-board interconnections in confined spaces.

Connections include FFC connectors (ZIF/LIF), through-hole and hot bar soldering.

Available in standard, super-slim and ultra-flexible cable options.

Molex offers a range of standard and customized FFC cables: Plating options, type A (same side) and type D (opposite-side) contact layouts, as well as customized folds and splits to improve routing and assembly.

**Premo Flex Product Capabilities**

**Contact us** to learn how Molex **Copper Flex**, **Silver Flex** and **Premo Flex** solutions can support your designs.

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