**Medical Products**

[**ATS**](https://www.qats.com/Applications/Medical-Applications) **–** Thermal management consulting, optimizing PCB layout, products for cooling medical applications including issues such as acoustic noise, EMI emissions, surface temperature constraints, dissemination of bacterial agents. Heat exchangers, Chillers, TEC Assembly, Heat Sinks.

[**Arizona Cap**](http://www.arizonacapacitors.com/wound-film-capacitors.php) – wound film capacitors for medical equipment

**[DLC Displays](http://www.dlcdisplay.com/intro/13.html)** – Black mask STN displays for medical diagnostic instruments ie blood pressure monitors

**[Diptronics](http://www.dip.com.tw/en/en-product-application/en-medical-devices)** – Illuminated/tactile/DIP/Detector switches for medical applications like fever thermometers, blood pressure gauge, digital thermometer, electric toothbrush

[**EI**](https://www.eiconnect.com/why-ei) **-** UL certification, but no medical safety certs.  Should be good enough for most applications such as respirators, etc.  I would avoid any implantable devices.

[Elma Electronic](http://www.elma.com) is a leader in systems level integration using their in house developed backplanes, cabinets and a family of compatible plug-in boards for VPX (SOSA) and VME based solutions. They offer a suite of development platforms through custom racks with integrated power and processing capabilities.

[**\*Everspin**](https://www.everspin.com/medical)– parallel I/O MRAM.

*Case 1:* ***Hemodialysis machines,*** *as a data log for machine performance parameters as well as individual patient parameters. 4Mb and 16Mb MRAM with inherent non-volatility of MRAM, requiring no battery or capacitors, the unlimited non-volatile write endurance and high speed in both non-volatile write cycles and read cycles. These unique MRAM attributes increase the reliability of the system for high reliability medical equipment. The simple asynchronous SRAM interface of parallel I/O MRAM products makes designs easy to implement without additional components. The robust reliability of Everspin MRAM technology allows engineers to satisfy the demanding requirements of the patient critical medical equipment market with Everspin’s standard commercial grade products.*

*Case 2:* ***Ventilators,*** *unique MRAM memory technology offers benefits to the electronic system design of Ventilator equipment. References to ventilator designs show which MRAM products enhance the performance and reliability of these designs.*

[**Faraday**](https://www.faraday-tech.com/en/content/Product/ASIC_Service/FPGA-to-ASIC)– FPGA to ASIC service for portable medical devices.

**Flexxon, Singapore (div of Morn Sun) –** Data storage for medical applications, cardiovascular/ECG Machine, aesthetics devices, WORM technology Write Only Read Medical, NAND Flash Technology, SSD, X-Mask Memory Card

**Flezon, Malaysia (div of Morn Sun)**- Medical grade speaker IEC60601-1-8 PN: FMS23013N08XPHM. Blood pressure meter, defibrillators, glucometer, Electric thermometer, i-Health Product

[**Hymeg Corp**](https://www.electrotechnik.com/home-2/eti-companies/hymeg) – high voltage precision thick film resistors serving the medical market

[**JAE**](https://www.jae.com/en/connectors/series/?search_ext_col_27%5b%5d=A1070) – various connectors including waterproof USB connectors.

*Monitors (Display): USB Type-C, HDMI 2.1, Hybrid Active Optical Cable for High-speed Transmission and Power supply,* [*Half-pitch (1.27 mm) Interface*](https://www.jae.com/en/connectors/series/detail/id=64355)*,* [*Friction Lock Type (1.0mm pitch) High Speed Transmission*](https://www.jae.com/en/connectors/series/detail/id=64291)*,* [*High Speed Transmission (LVDS, HDMI, PCIe)*](https://www.jae.com/en/connectors/series/detail/id=64290)*,* [*Flat Flexible Cable (FFC) High Speed Transmission (LVDS, HDMI, PCIe)*](https://www.jae.com/en/connectors/series/detail/id=83571)*,* [*LVDS transmission and VESA® Standard LCD Interface for High-speed Transmission (LICENSED BY I-PEX)*](https://www.jae.com/en/connectors/series/detail/id=64293)

*Ultrasound:* [*0.5 mm Pitch Stacking Type Board-to-Board*](https://www.jae.com/en/connectors/series/detail/id=64176)*,* [*High-speed Transmission Floating Board-to-board*](https://www.jae.com/en/connectors/series/detail/id=89284)*,* [*SMT Type 0.8 mm Pitch Board-to-Board (Parallel/ Vertical)*](https://www.jae.com/en/connectors/series/detail/id=64332)*,* [*Through Hole Type 0.8 mm Pitch Board-to-Board (Parallel/ Vertical)*](https://www.jae.com/en/connectors/series/detail/id=64333)*,* [*SMT Type 0.5 mm Pitch Board-to-Board (Parallel/ Vertical)*](https://www.jae.com/en/connectors/series/detail/id=64348)*,* [*Thin Wire Coaxial*](https://www.jae.com/en/connectors/series/detail/id=64287)*,* [*Half-pitch (1.27 mm) Interface*](https://www.jae.com/en/connectors/series/detail/id=64355)*,* [*USB Type-C*](https://www.jae.com/en/connectors/series/detail/id=86994)

*Electro-cardiogram (ECG):* [*Anti-shock D-sub for Medical Devices*](https://www.jae.com/en/connectors/series/detail/id=64253)*,* [*Half-pitch (1.27 mm) Interface*](https://www.jae.com/en/connectors/series/detail/id=64355) *,* [*USB Type-C*](https://www.jae.com/en/connectors/series/detail/id=86994)

*Wearables:* [*0.35 mm pitch low-profile stacking type board-to-board (FPC)*](https://www.jae.com/en/connectors/series/detail/id=64344)*,* [*LIF (Low Insertion Force) 0.5mm pitch top and bottom-surface connection type FPC*](https://www.jae.com/en/connectors/series/detail/id=64320)*,* [*Home washable smart textile for Wearable clothing devices*](https://www.jae.com/en/connectors/series/detail/id=93220)

[**Nichicon**](https://www.nichicon.co.jp/english/index.html)– Power sources for medical accelerator for corpuscular ray cancer treatment, large can-type aluminum electrolytic capacitors, conductive polymer aluminum solid electrolytic capacitors with 135°C. Conductive Polymer Hybrid Aluminum Electrolytic Capacitors.

[**ORION**](https://orionfans.com/index.php) – Medical Imaging applications, MRI machines, CT Scan

[**\*Protek**](http://www.protekdevices.com/xyz/_applications/med.php) – various; Medical Devices are susceptible to damage caused by ESD, which can be generated from sources such as human contact or air discharge. In addition, medical equipment can be sensitive to EMI/RFI interference because of their high operating frequencies. Protek products provide protection from the effects of ESD/EFT/Surges as defined by IEC 61000-4-2, IEC 61000-4-4 and IEC 61000-4-5.

***CT-SCAN SYSTEM:*** [*Control*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=120-1)*,* [*Dataline Protection*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=120-2)*,*[*Memory*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=120-3)*,*[*Power Supply*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=120-4)[*RS-232 & 802.11*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=120-5)*.*

***PACEMAKER:*** [*Body Sensor*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=121-1)*,*[*Microcontroller*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=121-2)*,*[*Pulse Generator*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=121-3)*,*

***PATIENT MONITORING SYSTEM:*** [*AC Power Supply*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=122-1)*,*[*Battery Charger Interface*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=122-2)*,*[*Control Buttons*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=122-3)*,*[*Electrodes*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=122-4)*,*[*USB2.0 & USB3.0 Interface*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=122-5)*.*

***X-RAY SYSTEM:*** [*Dataline Protection*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=123-1)*,*[*LCD Display*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=123-2)*,*[*Memory*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=123-3)*,*[*Power Supply*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=123-4)*,*[*RS-232 & 802.11*](http://www.protekdevices.com/xyz/_applications/app-results.php?id_ID=123-5)

[**TaiSaw TST**](https://www.taisaw.com/en/about.php)timing sources (crystals, Oscillators) and anything wireless would be a fit – medical sensors/monitors.

[**TWS Batteries**](https://www.tws.com/technology/applications/medical.html)  produces a broad range of custom value-added battery packs for a variety of industries including medical ISO 13485 applications.

[**\*WIN**](https://www.win-ent.com/) – Custom Embedded Solutions, Computers on Modules COM afford economic flexibility, portability, computing power, integration and future-proofing capability for medical devices. Other benefits of COM use in medical device designs include: Fast time to market, Simplified development, Easy modification of popular products, Easier life-cycle extension

*Case1: Blood-gas analyzer*

*Case 2: DNA duplication and research*

*Case 3: Laser cosmetic treatment system*

*PL-50180 Industrial Panel PC with 7th Gen Intel Core Processor Modular-Design for medical monitoring*

*PL-50060 Ind’l Touch panel PC features Intel E3800 Quad Core Processor*

*PL-50040 Compact fanless embedded device provides exceptional performance and value*

*PL-50030 Feature rich Next-gen fanless embedded device*

[**\*Winatic**](https://www.winatic.com/) – High quality magnetics, transformers, inductors, specialized focus on medical and dental, custom, high volume, high-voltage, hi-reliability for medical devices

[**\*Zierick**](http://www.zierick.com/pages/markets_medical.php)– wire to board connectors, board to board connectors, coils/sensors/PTC/fuses for medical apps including: **Quick Disconnects (QDTs), Receptacles, Insulation Displacement & Piercing Connectors (IDCs & IPC);** The [IPC-4-45](http://www.zierick.com/pages/sm_finewire.php) is Zierick’s insulation piercing connector which offers a cost-efficient, reliable solution for stranded or tinsel wire surface mount PCB terminations. Multiple wires can be terminated simultaneously without being stripped first. This connector also features a unique design of four wire housing holes and four individual piercing blades that can accommodate stranded or tinsel wire.

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