READY FOR THE FUTURE OF ELECTRONICS?

Hi-Rel Business | Power Management
Obsolescence Solutions | E-Mobility
OUR SERVICES AT A GLANCE

Hi-Rel Business
Aerospace, Avionics, Defense, High-Temperature Devices, Hybrid Capacitors, Motion Control, Rad-Hard Space Products

Power Management
AC/DC-, DC/DC-Converters, Battery Management Systems, Battery Supercapacitors, Energy Harvesting Products

E-Mobility
Capacitor Modules, EV-Charger Modules, Hybrid Vehicle Solutions, Vehicle Batteries

Obsolescence Solutions
Adapter Solutions, Anti-Counterfeiting Program, BGA Reballing, Long Lifetime Program, MCM, Memories, Requirement Engineering, Re-Tinning

PARTS MANAGEMENT PROGRAM
- Long Lifetime Program
- Up-Screening
- Quality Inspection

HI-REL BUSINESS

<table>
<thead>
<tr>
<th>Manufacturers</th>
<th>Products</th>
<th>Applications</th>
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<tbody>
<tr>
<td>Robotic Hot Solder Dip – Compliance with RoHS directive</td>
<td>Aerospace, Defense, Marine</td>
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<td>Elimination of Tin-Whiskers through tin-lead-alloy, Lead Attach Coplanarity and Compression Bond, leadfree, Gold Mitigation, Forming and Cutting of Pins, BGA Reballing for the Conversion of tin-lead</td>
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<tr>
<td>Multi-Channel Analog to Digital Converters, Sampling A/D-Converters, LDOs Voltage References, Multi-Channel Complete Data Acquisition, Amplifiers LDTS Isolated and Non-isolated DC/DC-Converters, Operating Temperature up to +200°C</td>
<td>Hi-Rel Military, Airborne, Aerospace, High Temperature</td>
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# HI-REL BUSINESS

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</table>
| **Epsiler ElectricFuel** | Development and production of custom and mobile portable power systems  
Aerospace & UAV: Rechargeable batteries: High energy density (up to 270Wh/kg)  
Medical & Industrial products: standard & custom Li-Ion rechargeable batteries  
Micro-grid energy storage systems | Battery Power Systems,  
UAV, Tank Military |
| **EvansCaps** | Highest Energy and Power Density Capacitors with MTBF>5,000,000 hours  
Product range 68 to 240,000μF (10 to 125V) +85°C, +125°C and +200°C  
Very low ESR, very high current handling capability, Highest levels of quality | Power hold up Avionics,  
Laser Pulse Power, Phased Array Radar Pulse Power,  
Replacement of Batteries,  
Oil & Gas |
| **Infineon** | ESCC 5000 and 5010 qualified Hi-Rel components  
Rad-Hard Power MOSFETs, Microwave Transistors, Microwave Diodes, Bare dies  
No export license required! | Space, Satellite,  
Microwave RF Applications |
| **IQR HiRel** | Rad-Hard & Hermetic MOSFETs, Schottky & Ultra-Fast Rectifiers, IGBTs  
Integrated Circuits, LDOS - MIL-PRF-19500 & MIL-PRF-38534 qualified parts  
DC/DC-Converters, EMI Filters, Rad-Hard Solid State Relays, Hybrids & Modules | Hi-Rel, Defense, Space, Aircraft |
| **ISOCOM** | Rad-Hard Space qualified Optocouplers  
High Gain, High Speed, High Voltage Optocouplers  
Manufacturing, Screening & Testing of Hi-Rel optoelectronic components  
European manufacturer, ITAR free products | Hi-Rel, Space, Military, Avionics |
| **Nanoramic Laboratories** | The world’s first Reflowable, Slim Profile, Low ESR Ultracapacitor +85°C, 500mF  
Hermetic Ultra-Capacitor Technology D & AA size cells, 33 to 370F capacitance  
Extreme temperature operation -40 to +300°C, Custom Modules, High Cycle Life  
High Shock 5000 peak & Vibration 20G rms, Lithium Free – no risk of explosions  
High Cycle Life, 20+ year shelf life, weldable terminals for parallel or series connect | Hi-Rel Avionics, High Temperature Products for Oil & Gas |
| **Redler Technologies** | Smart SSD circuit breakers, High performance miniature motor controller drivers,  
Wide range of Defense oriented motion control drivers, Electronic Circuit Breakers,  
BOSS-Multi Axis Motor Controllers, High performance EV Dual-motor controller drivers,  
High performance and high power motor controller drivers, Multichannel Power Riders, Heavy duty motor fan drivers, High performance motor controller drivers, High Performance Stabilization Systems | Mobile Robots, Missiles,  
Tank Applications, Drone Motor Motion Control,  
Ship Motor Drivers, Circuit Breakers, Landing Gear and Aviation |
| **Space IC** | Rad-Hard POL Converters, Custom Power Bus Products  
Quad LVDS Line Receiver with Extended Common Mode, Quad LVDS Line Driver  
Screening & testing of SPACE IC products to the ESCC 9000 requirements | Space Missions,  
Satellite Business |
| **Teledyne E2V** | Discontinued and End of Life industrial and military parts  
QML Class Q and Class V certified manufacturer, MIL-PRF-38535, MIL-STD-883  
Analog & Interface ICs: Amplifiers, A/D & D/A Converters  
Memories: EPROMs, EEPROMs, SRAMS, CPLD Dual Port RAMs  
Programmable & Discrete Logic ICs, FIFOs  
Wafer & Bare Die Banking, Components Up-screening Program | High End Industry,  
Aerospace, Defense, Transportation |
| **XSIS** | High Reliability & High Temperature Hybrid Microcircuit Crystal Oscillators  
Lowest voltage is 3.3V, SMD-Packages 5x7mm, High Shock & Vibration Designs  
Operating Temperature up to +230°C | Hi-Rel, Defense, Space, Aircraft, High Temperature |
## POWER MANAGEMENT

<table>
<thead>
<tr>
<th>Manufacturers</th>
<th>Products</th>
<th>Applications</th>
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</table>
| **CALEX** | Isolated single, dual and triple output DC/DC Converters up to 2100W  
High Performance DC/DC Bricks, High Efficiency Operation up to 97%  
Module & Open Frame Converters, SM&HT, Brick Assembly Modules (CBAM™)  
Commercial-off-the-shelf (COTS) Converters, Bi-directional 3000W,  
High Power Custom DC/DC Solutions,  
Operating Temperature Range: -40 to +105°C, up to 5-year warranty | Industrial, Transportation,  
Medical Industry, Avionics,  
Defense, Marine |
| **CMTech** | Single and dual output DC/DC Converters from 1 to 75W  
Industry Standard Footprints: SIP, DIP, SMT, 1x1 and 1x2 thru hole patterns  
Switch made AC/DC Supplies, encapsulated PCB mount from 4 to 60W  
2-year warranty | Commercial, Industrial,  
Medical Industry, Railway |
| **DATEL** | DC/DC Converters Isolated and Non-Isolated  
Point-of-Load DC/DC Converters up to 100W  
24-Pin DIP DC/DC-Converters up to 15W, 1x1 DC/DC-Converters up to 40W  
DOSA-Compatible Brick DC/DC-Converters 14 to 600W | Industrial, Medical,  
Scientific, Hi-Rel Military,  
Airborne, Aerospace,  
Railway |
| **e-peas** | Highly Efficient Dual Regulated Output Ambient Energy Manager  
Harvesting from photovoltaic cells and thermo-electric generators  
Ultra-Low-Power-Start-up, Ultra-Low-Power Boost Regulator  
Integrated LDO Regulator at low voltage 1.8V and high voltage 4.2V  
Flexible Energy Storage Management, Input Voltage 60mV, Input Power 3mW  
Smallest Footprint, package 0N-28-pin, Smallest external BOM  
New Products: Photovoltaic-, Thermal-, Vibration-, RF- Energy Harvesting PMICs | Wireless sensors,  
Industry 4.0, Home Automation, Security,  
Retail, Smart Metering,  
Smart Agriculture,  
Wearables, E-Health,  
Mobility |
| **Evanscaps** | Highest Energy and Power Density Capacitors with MTBF>5,000,000 hours  
Product range: 68 to 240,000μF (10 to 125V)  
+85°C and -25°C  
Very low ESR, very high current handling capability, Highest levels of quality  
Operating Temperature up to +200°C | Power hold up Avionics,  
Laser Pulse Power, Phased Array Radar Pulse Power,  
Replacement of Standard Capacitors & Batteries,  
Oil & Gas |
| **Goncharov** | AC/DC Power Supplies New Generation Series JETA with EMC Filter 60 to 5000W  
Input: 3-phase 400VAC, 230VAC, 115VAC  
Output: 5 to 60VDC, 12 to 60VDC, 24 to 60VDC  
Operating Temperature Range: -50 to +85°C, PFC up to 93% | Industrial, Server, COTS  
Military, Airborne |
| **NetPower** | Isolated DC/DC - Brick Converters 15 to 800W, Efficiency up to 95%  
Over-voltage, over-current, short-circuit and over-temperature protection  
Rugged COTS DC/DC Converters up to 800W, Input Voltage range 8:1, 4:1, 2:1  
Railway DC/DC Converters: Input Voltage 34 to 160VDC, 60 to 300W  
High Voltage DC/DC Converters: 180 to 500VDC, 300 to 800W  
Hybrid EV on-board DC/DC Converters with CAN 2.0 up to 6.6kW Peak Power | Railway, Industrial, Electric Vehicle, Rugged COTS |
| **TOP POWER** | Single and dual output DC/DC Converters from 1 to 40W,  
Industry Standard Footprints: SIP, DIP, SMT, 1x1 and 1x2 thru hole patterns,  
Switch made AC/DC Supplies, encapsulated PCB mount from 4 to 60W,  
AC-DC power supply 25 to 1200W Enclosed/Open frame type  
16 to 480W DC DIN RAIL Power Supply  
2-year warranty | Commercial, Industrial,  
Medical Industry, Railway |
# E-MOBILITY

## Manufacturers

### Calex

- **Product:** 1000 Watt Full-Bricks with wide input range at 9 to 36VDC and efficiency at 95%.
- **Application:** EV-Chargers, EV, Autonomous Vehicles, Mild-Hybrid-Vehicles

### Degson

- **Product:** SAE and IEC AC Electric Vehicle Charging Plugs Value-endurance 2500V, Insulation Resistance >10MΩ, Grounding resistance <0.05Ω in compliance with SAE J1772-2017 and IEC 62196-1 -2014.
- **Application:** Rail Transportation, EV, Electric Machinery, Solar Photovoltaic Industry, Charging Stations

### Epsilon ElectricFuel

- **Product:** New Products: Orbital Fuse Terminals, Wire Connectors, Track Double Layer Terminal Blocks
- **Application:** Battery Power Systems

### NetPower

- **Product:** EV Input DC-DC converters from 60V up to 800V with 1 to 4.2KW.
- **Application:** Electric Vehicle

### Redler Technologies

- **Application:** Automotive, Hybrid vehicles, Very small robots

### Samwha

- **Product:** Green-Cap Modules with rated Voltage of 15 to 129.6V and capacitance with 66.6 to 500F. Operating Temperature -40°C to +85°C and up to 10 years Lifetime. Other Green-Cap Modules are made on custom-made basis. Balancing and overvoltage protection of individual cell. Super capacitors up to 3V, wide temperature range -40 to +65°C, -25 to +70°C. Green Caps (EDLC): 3 to 3000F, 2.5 to 2.7V, very low ESR, Environmental, Hybrid Capacitors: 250 to 7500F, 2.8V, Low ESR, No explosion, Long cycle life. Battery-Caps: 1000 to 70000F, 2.7V High Power and High Energy types
- **Application:** Hybrid Vehicles, Golfcars, Electric Scooters
## OBsolescence Solutions

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<td>Component Obsolescence Challenges, Non-availability of tin-lead components</td>
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<td>Life-time buy opportunity (Long Term Packaging)</td>
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<td>BGA Reballing for the Conversion of tin-lead, Component Harvesting</td>
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<td>Elimination of Tin-Whiskers through tin-lead-alloy, grid failure &lt;1%</td>
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<td>New Certification: Nadcap AC7120/11</td>
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<td>DATEL products are guaranteed to be available for long-term programs</td>
<td>Medical Industry, Industrial, Scientific, Military, Airborne, Aerospace</td>
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<td>Form-Fit-Function guaranteed for obsolete products</td>
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<td>System in a Package (SIP) Technology is a Multi-Chip Module to improve performance and/or reliability while reducing size</td>
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<td>Legacy 24 Bit Sampling A/D-Converters, 16 Bit D/A-Converters, Amplifiers</td>
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<td>Multi-Channel Converters – Hybrid Data Acquisition Systems</td>
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<td>Obsolete component replacement, Reverse Engineering</td>
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<td>Process Parting &amp; Device Replication, Custom solutions</td>
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<td>Low-volume &amp; High-volume applications, RoHS and Non-RoHS versions available</td>
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<td>High Speed - Low Latency - Low Power Consumption Memory Technology,</td>
<td>Tele-Communication, IoT, Industrial Equipment, Mobile Applications, Low Power Consumption, Medical Equipment, Smart Home, Factory Automation</td>
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<td>SLC NAND Flash, SPI NAND Flash, Asynchronous Low Power SRAM, Asynchronous Fast SRAM, Synchronous SRAM, Quadrupel SRAM, DDR SRAM, QDR SRAM, Small Footprint, Long-term Support</td>
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<td>Discontinued and End of Life industrial and military parts</td>
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<td>Custom Solutions for mitigating Device Obsolescence and Board Re-Design</td>
<td>Adapter Solutions, Device Specific Package Conversion</td>
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<td>Adapter Products, 1:1 Footprint conversion, ASIC / FPGA Adapters to include code reconstruction and re-targeting, Interconnect Pitch Adapters, Programming Adapter Functionality Upgrade, Production &amp; Test Sockets, Atmel AVR Adapters for µC Reverse Engineering of Small Plastic &amp; Metal Parts</td>
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<td>High Reliability Hybrid Microcircuit Crystal Oscillators &amp; Crystal Units</td>
<td>Military, High Reliability Industrial &amp; Telecommunications, Defense, Space, Aircraft, High Temperature</td>
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<td>Crystal Oscillators: Standard, Military, High Temperature up to +230°C, QPLM55310</td>
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<td>Crystal Units: ØP, Crystal Units, Custom Crystal Units</td>
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<td>Obsolete Through hole packages, High Shock &amp; Vibration Designs</td>
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<td>Custom Solutions, Up-screening Program</td>
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<td>DISPLAY AND CONTROL ELEMENTS</td>
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<td>Piezoelectric Pushbutton Switches: Ring-, Point- and Non-Illuminated from 16mm to 28mm Diameters. Piezo Electric Keypads, Access Control Stand Alone, Access Control Keypads with communication protocol, Access Control Keypads Reader</td>
<td>Industrial Measuring Instruments, Control Devices</td>
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<td></td>
<td>Industrial Solutions and Custom Design. All products are in Aluminium or Stainless Steel with an Operation Temperature from -40 to +125°C and IP66/IP69K protection class. Tested for 50,000,000 cycles including vibration and impact tests.</td>
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<td>Piezo Technology Pushbuttons work reliably under a glass thickness of 3 mm.</td>
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<td>Character Displays &amp; Graphic LCD Displays, TN-, STN-, FSTN-, COB-, TAB-, TFT-, LCD-Modules, HDMI/VGA Driver Boards, UART Interface</td>
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</tr>
<tr>
<td></td>
<td>OLED Character &amp; Graphic Displays, OLED Modules, OLED Switches</td>
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OUR SERVICES

KAMAKA WAS ESTABLISHED IN 1992

- Strategic Obsolescence Management
- Anti-Counterfeiting Program
- Life Cycle Management
- Long Lifetime Program up to 25 years
- Last Time Buy, EOL-, PCN-Service
- Requirement Engineering
- Custom Multi Chip Modules
- Supplier Risk Management
- Worldwide access to allocation & obsolete products
- Qualified visual & electrical test reports
- Monitoring of critical components
- Up-Screening
- Quality Inspection

- Traceability is guaranteed
- AQL spot checks according to DIN/ISO 2859-1
- Total Quality Management: DIN EN 9120:2018 (technically equivalent to AS 9120B and SJAC 9120A); DIN EN ISO 9001:2015; DIN EN 61340-5-1: ESD compliant storage & handling process
ABOUT US

SINCE 1992, KAMAKA ELECTRONIC BAUELEMENTE VERTRIEBS GMBH HAS GLOBALLY ACTED AS ESTABLISHED DISTRIBUTOR FOR WELL-KNOWN MANUFACTURERS. CUSTOMER SATISFACTION IS OUR PRIORITY, WE DO NOT ONLY PROVIDE YOU WITH COMPETENT AND QUALIFIED CONSULTATION BUT ALSO WITH A RELIABLE APPLICATION SUPPORT TO ALL OUR PRODUCTS.

HEADQUARTERS
Ulmer Strasse 130
73431 Aalen
Germany
Phone  +49-7361-9662-0
Fax  +49-7361-9662-29

www.kamaka.de

SALES OFFICE NORTH
Robert-Bosch-Strasse 25
25335 Elmshorn
Germany
Phone  +49-4121-463-900
Fax  +49-4121-463-901

SALES OFFICE CENTRAL
Montgolfier-Allee
60486 Frankfurt
Germany
Mobile  +49-179-133-9767