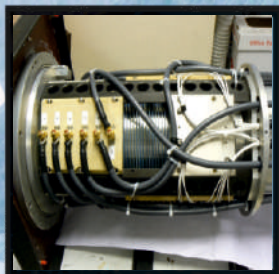
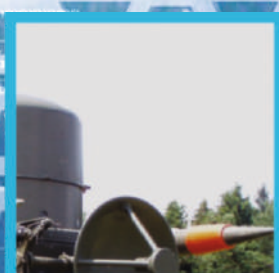


DEFENCE

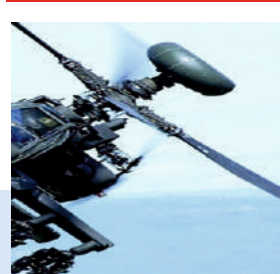


TELECOM

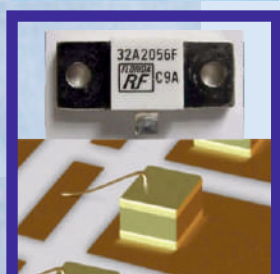


AEROSPACE

INDUSTRIAL



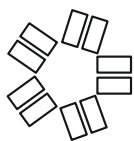
AUTOMOTIVE



TMS
Elektronik

www.tms-elektronik.com

Line Card



NOVACAP



Voltronics

smiths interconnect
bringing technology to life



MPG
CONNECTING & PROTECTING
a DOVER company



DowKey Microwave
CORPORATION



STEATITE
COMPUTING - POWER - COMMUNICATIONS



IRONWAVE
TECHNOLOGIES



linkmicrotek



avalanchetechnology



PANDECT
PRECISION
COMPONENTS
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Cursor Controls
Inventors and Innovators of HMI Solutions



Ultra Electronics
Measurement Systems Inc

sonitron[®]
Excellence in physical acoustics

nv/sa



Sherborne Sensors
....the first choice in precision

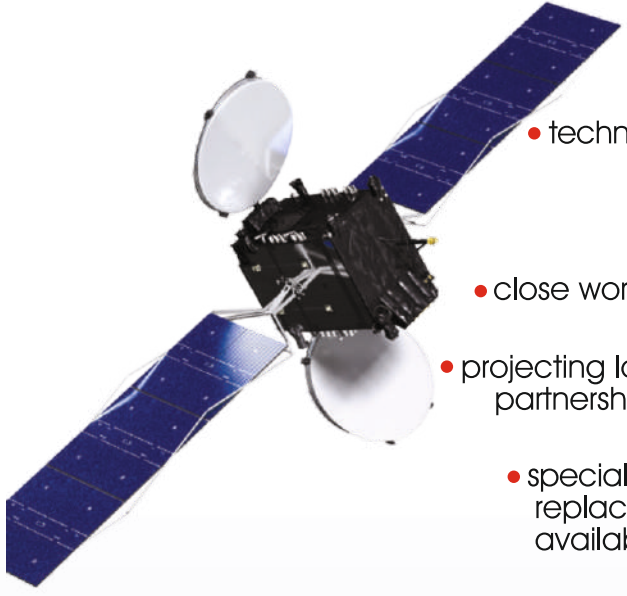


PWSENSING



NICOMATIC

Company Profile Company Profile



Our strenght and skills are:

- technical support abilities to assist engineers at design phase of applications to meet their performance goals
 - components engineering background
- close working with customer's Engineering and R&D Departments
- projecting long term relations and committing to develop business partnership with customers and principals
- specializing on custom-design items and search for component replacements among the various product Technologies available
- efficient and reliable service and competitive prices
- providing value added service and solutions to procurement needs of customers
- focusing to generate new demand and opportunities and develop new business for our principals



Our Services Our Services

- Representation, Marketing and Distribution Services
- Engineering support with MSc. level expertise and strong background
- Product development capability to support both customers and manufacturers
- Program/Project Management resources with experience in staffing "on site" engineering and asset management personnel for major programs and customers
- Technical and Tendering Liaison
- Consultancy & Aftersales services
- Training and Document Facilitation Full Technical and Service Support
- System Integration & Customisation
- Logistics/procurement services for both Turkish and International companies

Company Profile

Our main Military and High-Rel Product Line includes:

- RF & Microwave active and passive componen
- Connector, cable products and Assemblies
- Electro-mechanical components
- Opto Electronic
- Sensors and Semiconductors
- Antennas

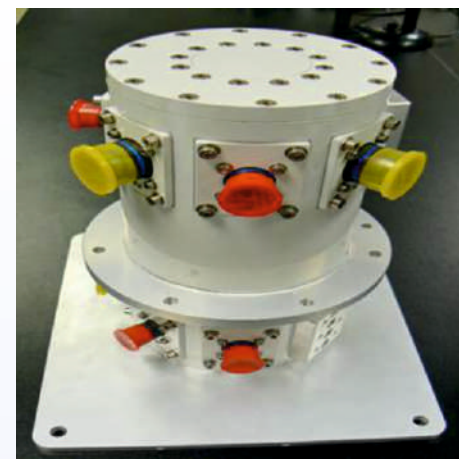


Market Segments We Served

Defense Electronics-Government, Military and Aerospace

We offer wide selection of military and aerospace components and systems of military and government use

- Electronic Warfare ELINT, SIGINT, COMINT
- RADAR (Ground - Naval - Military Airborne platforms)
- Military tactical Trunk, Frequency Hopping and Man Pack Radio communication systems
- Military surveillance and Fire Control systems
- Missiles - Guidance systems, Launchers
- Armoured Vehicles, Remote Weapon Systems
- Avionic Systems
- Space-Payload and Ground station
- Unmanned vehicles - UAV, UGV



Telecommunication

- GSM-UMTS Mobile communication - Tetra, PMR- wireless infrastructure, 5G
- Satellite communication - Uplink / Downlink, GPS, VSAT, SMATV - MATV
- Broadcasting-FM Radio/TV
- ISM - WLL - MMDS microwave digital radios point- to - point, point - to - multipoint

Scientific Research and instrumentation

Medical, Magnetic Resonance Imaging (MRI)

Automotive / EV Electric Vehicles /Energy Storage and Charge Stations
Industrial Automation /Robotics

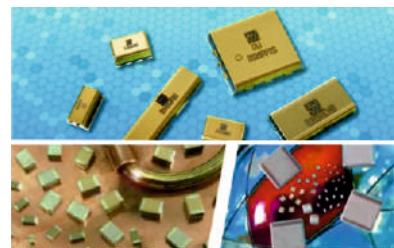
Product Line - RF Microwave & Semiconductors



KNOWLES PRECISION DEVICES

www.knowlescapacitors.com

- Ultra High Q porous multilayer capacitors, Microwave & RF Capacitors
- Single Layer capacitors,
- Thin-Film Filters & Components power dividers Gain Equalizers
- DC Blocking capacitors
- XTreme-Q ceramic resonator and filters



KNOWLES PRECISION DEVICES

www.knowlescapacitors.com

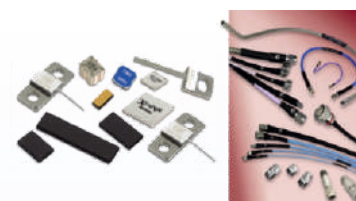
- RF Microwave Trimmer capacitors,
- Non - Magnetic components,
- Non - Magnetic ceramic chip capacitors for MRI applications



SMITHS INTERCONNECT INC.

www.smithsinterconnect.com

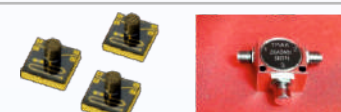
- Terminations, Attenuators, thin and thick film RF/MW Resistive Components
- High power low-loss coaxial semirigid cable assemblies,
- Hybrid and directional couplers
- RF Microwave passive components Attenuators, Thermopad, Smart load



SMITHS INTERCONNECT INC.

www.smithsinterconnect.com

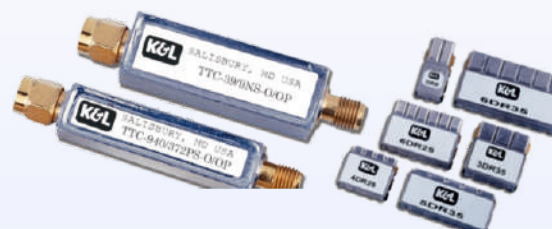
- High Performance Ferrite components
- Coaxial, Drop-in, Waveguide SMT Microstrip Circulators and Isolators for Space, Radar, EW Applications
- UHF to L-Band Frequency range, peak power performance, small and compact
- Space Qualified Hi-Rel RF Microwave and Ferrite components
- Time and Frequency Systems GPS Clocks for Homeland security and Public Safety Applications



K&L MICROWAVE

www.klmicrowave.com

- Cavity Filters and Waveguide Filters
- Delay Line Filters, Dielectric Resonator Filters
- Tubular Filters, Suspended Substrates,
- LTE Products
- Multi-Function Assemblies,
- Switched Filter Banks
- Space Qualified Filters



DOW-KEY MICROWAVE

www.dowkey.com

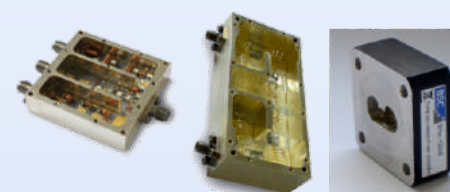
- RF Microwave Coaxial Switches & RF Coaxial Relays,
- Waveguide Switches
- Custom Switch Matrix Solutions
- Space Qualified Switches & Assemblies
- Integrated assemblies for Broadcast Satcom Avionics and ATE Applications



BSC FILTERS LTD

www.bsccfilters.com

- RF Microwave Filters, For Radar, Defense/EW, Telecom
- Diplexers, switched multiplexers,
- Dielectric resonator filters,
- Space qualified filters
- Equalizers, NANO Transitions



POLE ZERO

www.polezero.com

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- Micro, Mini, Maxi Power Pole and Nano Series. Notch Series. Hopping Filters,
- Integrated Cosite Equipments (ICE) for interference mitigation

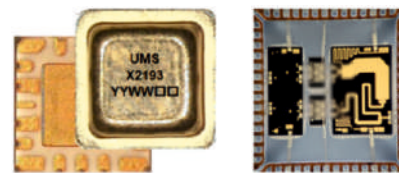


Product Line - RF Microwave & Semiconductors



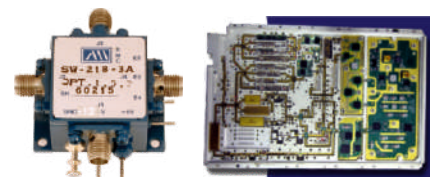
UNITED MONOLITHICS SEMICONDUCTOR www.ums-gaas.com

- RF Microwave and mmwave components and IC s for Telecom, Defence and Space GaAs, GaN,
- FET & MMIC devices,
- Design and Foundry Services



AMERICAN MICROWAVE CORP www.americanmicrowavecorp.com

- DC to 40 GHz Solid State Control Components.
- Microwave Solid State Switches,
- Electronically Variable Attenuators (AGH Technology, AGT Technology,)
- Detector Log Video Amplifiers, Bias Tees, and Integrated Assemblies



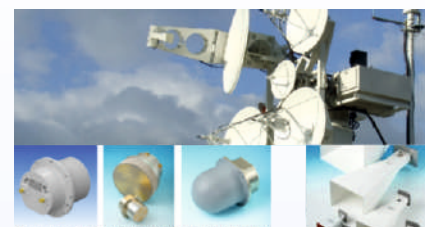
AVALANCHE TECHNOLOGY www.avalanche-technology.com

- Spin Transfer Torque Magnetic RAM, STT - MRAM based discrete Persistent SRAM (P-SRAM) non - volatile memory products For Hi Rel applications

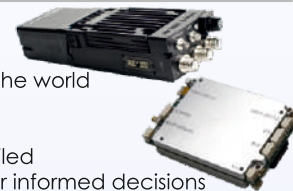


STEATITE LTD. www.steatite.co.uk

- Ultra Wide Band Antennas for ECM – Radar, EMC, ELINT SIGINT Land, Sea, Airborne applications, Satcom and Test and Test & Measurement,
- Horn Antennas, EMC & HiRF Antennas
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- Wave Relay® enabled MPU5 smart radio unites all your critical sensor and data sources in real time.
- the most scalable and advanced MANET (mobile ad hoc network) system in the world
- Providing a secure voice, video and high bandwidth data network anywhere (including data-links for autonomous and robotic systems)
- The ability to link multiple elements (such as UAV's to UGV's) and stream detailed information securely across the network enables key personnel to make better informed decisions



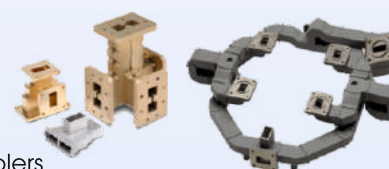
LINK MICROTEK www.linkmicrotek.com

- Rotary Joints for S-Band ATC Radar
- Multichannel Large Rotary Joints
- X-Band Rotary Joints
- Satcom SNG SOTM Rotary Joints



SYLATECH www.sylatech.com

- Waveguide bends - sidewall topwall couplers
- Tees - Twists - Flanges - Power combiners & Dividers
- Antenna Feedhorns - OMTs Orthomode Transducers
- Adapters & Transitions - Crossguide Loop Directional Couplers



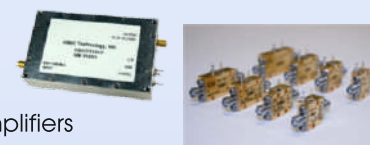
QUARTERWAVE Corp. www.quarterwave.com

- Low noise, pulsed and CW traveling wave tube amplifiers (TWTAs) capable of power levels from
- 10 to 50 kilowatts over frequency ranges from 1 to 95 GHz
- Custom TWTAs,
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- GaAs, GaN Power Amplifiers, • Low Noise Amplifiers,
- TWT Driver Amplifiers • Converters, Transceivers, Multiplier Amplifiers
- Miniature Amplifiers, • Ka-Band Block Up Converters,
- Ultra Wide Band Low Noise Amplifiers



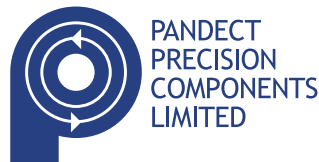
Product Line - Electro Mechanical & Sensors



OXLEY DEVELOPMENT GROUP LTD

www.oxley.com

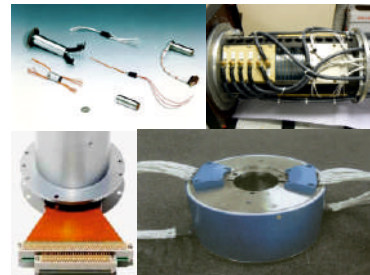
- Military LED Panel indicators, LED Lamps,
- EMI Filters, • Interconnect solutions
- LED Lighting systems for Military Air, Naval and Land vehicles



PANDECT PRECISION COMPONENTS LTD

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- Pandect can design and manufacture slipring units suitable for many usages or environments from sub-sea to high altitude applications like Tank turrets, Radar, Missile launch systems, helicopters, periscopes, Gimballed Systems, Sonar



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- Mil-Spec MIL-DTL-83513 Micro-D connectors and custom design connectors,
- MIL-DTL-38999III connector,
- MIL-DTL 32139 Nano-D connectors
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- Human Machine Interface solutions,
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- Corrosion-resistant silicone gasket
- Insulating silicones • Shielding metal gasketing
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- Aircraft grade seals • Thermal Control
- Certified for Military,Avionics and Space



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- Ruggedised solutions ,Ergonomic & Desktop Assemblies
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- Buzzers & Transducers,
- Piezoceramic speakers & Amplifiers,
- Alarm & Sirens for Industrial Consumer, Military applications



GREENRAY INDUSTRIES

www.greenrayindustries.com

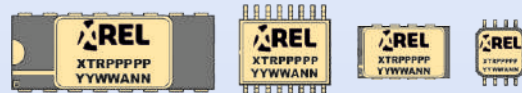
- High precision Xtal oscillators
- TCXO,VCXO,OCXO for Military communication aerospace and instrumentation applications



XREL SEMICONDUCTOR

www.x-relsemi.com - www.easii-ic.com

- High Reliability and High Temperature semiconductor components up to - 60 to + 230 C,
- Power management,
- Clock and Timing,
- Discrete Transistors and Diodes, Logic,
- Interfacing and Tranceivers



Product Line - Electro Mechanical & Sensors



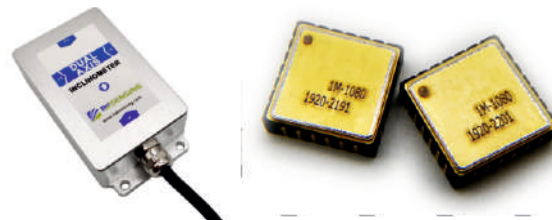
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- High performance micro-connectors Rectangular Microminiature MIL-C 83513 connectors for Military Aerospace Avionics and Transport applications,
- Crimpflex Connectors, FFC Cables & Jumpers
- Switch air Metal Domes for Membrane switches



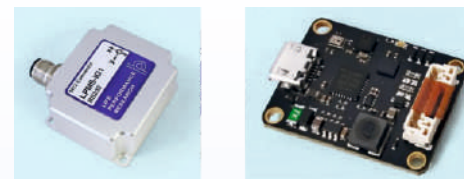
BWSENSING
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- Inclinometer Sensors,
- Electronic compass
- IMU, AHRS
- MEMS Gyroscope , GNSS /INS,
- Accelerometers, Gyro Chips
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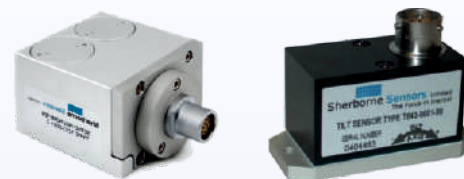
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- Advance sensors systems and sensor fusion solutions
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- Industrial Grade IMU enhanced GNSS OEM receiver for vehicle driver-testing market
- Easy integration with an external IMU, Odometry ,LIDAR or visual SLAM



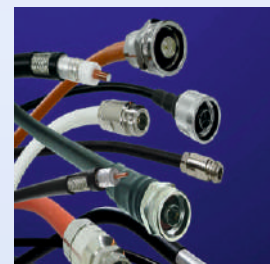
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www.aurelwireless.com

- Wireless Solutions, Embedded Radio Frequency
- Modules, Digital Data Transceivers, Radio Modems
- OOK & FSK Receivers, Heating Elements & Power
- Power Resistors High Thermal Conductivity
- Technologies for Power Lighting Applications



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www.timesmicrowave.com

- High Performance Microwave Coax Cables and connectors, cable assemblies for Military & Aerospace applications, Engineering, development and manufacturing of
- RF and microwave products in a versions for military, and commercial.
- Our comprehensive range includes RF cables, connectors, and assemblies according to MIL-T-81490, MIL-C-87104, and MIL-STD-810 with operating frequencies to 65 Ghz.
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- LMR series low loss flex coax cables for Commercial applications like GSM-UMTS-UHF VHF and Radio Links



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- DC-DC Converters Regulated, unregulated, Power Supplies for Industrial and Telecom Applications, DIN RAIL Power Supplies



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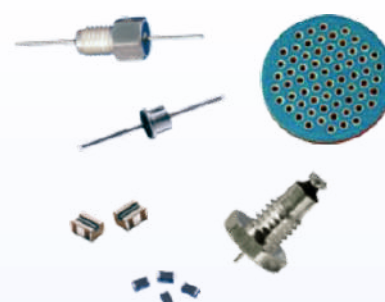
Thin Film Build-to-Print

- Your design, our factory
- Filters, Heatsinks, Standoffs, Integrated Passive Components and RC Networks
- High K Dielectric to improve performance and reduce size



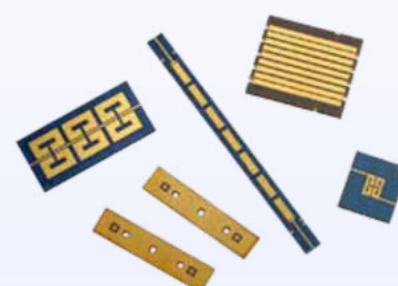
Thin Film Filters, Resonators and Equalizers

- Small, lightweight and temperature stable
- Surface mountable
- New >40 GHz Surface Mounted Filters for point-to-point backhaul
- GaN impedance matching circuits



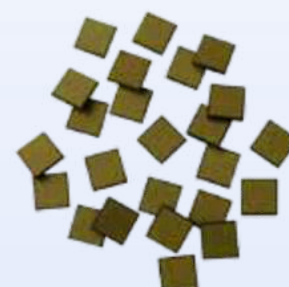
Hi-Q Multi-Layer Capacitors

- New Broadband Block 1111 case size for high power wide band amplifiers
- New extreme leach resistant terminations for harsh soldering profiles
- New 0201 Opti-Caps - improved low frequency



Hi-Q Single-Layer Capacitors

- Space qualified Hi-K dielectric
- Over 200 million life hours without failure
- Wide range of materials and designs



**Capability
in Electronic
Components**





MICROWAVE PRODUCTS GROUP SPECIALIZES IN RF FILTERS, SWITCHES AND INTEGRATED MICROWAVE ASSEMBLIES (IMAS) FROM PROTOTYPES, UP TO HIGH VOLUME APPLICATIONS FOR THE ELECTRONIC WARFARE AND SPACE MARKET.

MPG DELIVERS

CORE PRODUCT EXPERTISE

- PRODUCT CUSTOMIZATION
- PREFERRED SUPPLIER
- IN-HOUSE MANUFACTURING

ADDED VALUE SOLUTIONS

- INTEGRATED MICROWAVE ASSEMBLIES (IMAS)
- MULTI-FUNCTION ASSEMBLIES
- MODULAR OPEN SYSTEM ARCHITECTURE (MOSA)

CONNECT & PROTECT

PRESENT AND FUTURE DYNAMIC THREATS

IDEAL FOR:

- * RADAR & ELECTRONIC WARFARE (EW) SYSTEMS
- * COMMAND & CONTROL VEHICLES (GROUND, NAVAL, AIRBORNE)
- * SOFTWARE DEFINED RADIOS (SDR)
- * VEHICLE AMPLIFIER ADAPTERS (VAA)

FILTERS



SURFACE MOUNT



LUMPED ELEMENT

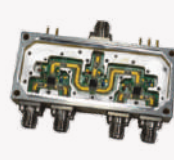


WAVEGUIDE

SWITCHES



SURFACE MOUNT

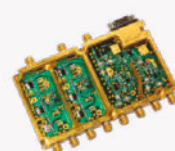


COAXIAL

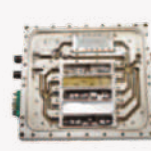


WAVEGUIDE

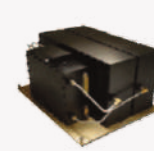
INTEGRATED MICROWAVE ASSEMBLIES (IMAS)



SIGNAL DISTRIBUTION UNIT



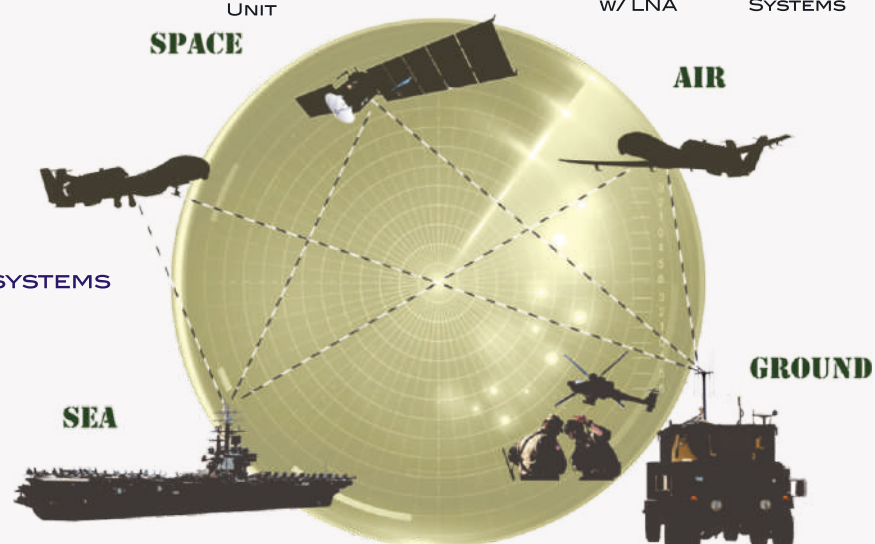
18 GHZ IMA



DOWN CONVERTER W/ LNA



TEST SYSTEMS



Diamonds RF Resistives

- High power-to-size ratings to 300 W
- Excellent peak power performance
- Extremely low parasitic capacitance
- Super compact form factor
- Space qualified



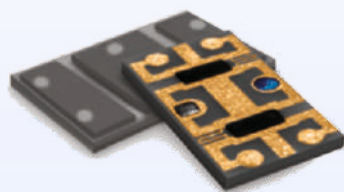
RF Components

- Product versions from DC to 50 GHz
- Excellent RF broadband performance
- Footprint compatibility with Thermopad®
- Surface mount, wire bond, tab, flange and coaxial configurations



Attenuators

- Surface mount, wire bondable, tab and cover, coaxial configurations
- Support every application from DC to 50 GHz
- 0.1 to 400 watt versions
- Commercial and high reliability product lines
- Space and military qualified



RF Ferrites & Passives

- Microwave and millimeter-wave
- Waveguide coaxial, drop-in and stripline isolators and circulators
- Low loss and high power single and multiple junctions with integrated terminations



RF Filters

- RF filters, multiplexers, switched filter banks, and integrated assemblies, from 100 KHz to 65 GHz
- Bandpass, lowpass, highpass, notch, diplexed & multiplex options
- Small footprint and light weight
- Surface mountable for pick and place applications with Planar X topology



Flexible Cable Assemblies

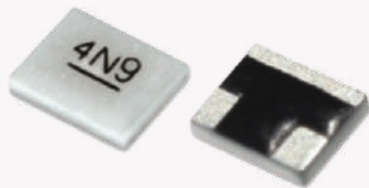
- Qualified to NASA & ESA requirements
- Flexible low loss up to 40 GHz
- Robust and reliable cable to connector technology



Temperature Variable Attenuators

SpaceNXT™ HC Series

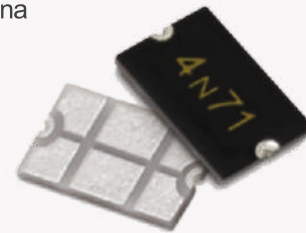
- Up to 18 GHz, with attenuation values from 0 dB to 20 dB
- Design flexibility, small footprint
- Solderable surface mount
- Wide attenuation and TCA shifts available
- High volume solution



Temperature Variable Attenuators

SpaceNXT™ K2TVA Thermopad® Series

- Rated for 17-22 GHz and 27-32 GHz
- Up to 4 times temperature coefficient of attenuation over the original KTVA series
- Using robust proven thick film process technology on an alumina substrate
- Mounting configuration options available



Ku-Band Multiway Isolated Splitter

SpaceNXT™ MWC Series

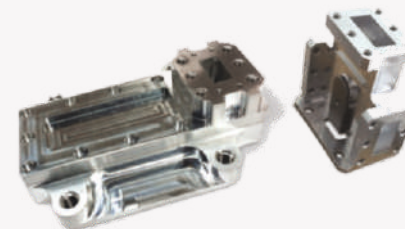
- 2-port Ku-Band isolated splitter
- Operating from 10.7 to 12.8 GHz
- EMC shielded, RoHS stackable housing
- Factory configuration to operate as a combiner or a splitter
- Low insertion loss, <1.4 dB over temperature



High Power Waveguide Circulators & Loads

SpaceNXT™ Ku Series

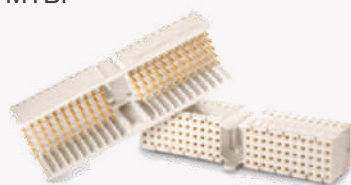
- Guaranteed low and stable insertion loss under maximum power
- Proven circulator design tested to 350 Watts CW Power. Unconditionally linear
- Meeting EMC specifications to -80 dBi



ESA Qualified Backplane Connector

SpaceNXT™ Aurora Series

- COTS Plus 2mm hard metric solution
- Qualified to ESA ESCC 3401 specifications
- Available in 55, 110 and 125 contacts size
- Right angle and mezzanine configurations
- Enhanced gold plating with 1.27µm (50 µin) for increased MTBF



Coaxial Cable Assemblies

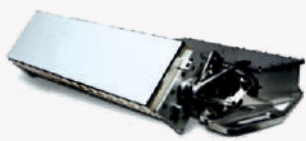
SpaceNXT™ Q Series

- Up to 40 GHz
- Low loss dielectric material for lower attenuation
- Meets the outgassing requirements of NASA/ESA when tested per ASTM E595
- Direct solder sleeves to outer braids for superior reliability



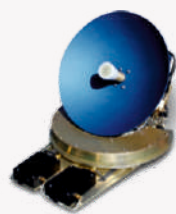
Airborne SATCOM

- Continuous connectivity at any altitude
- Market leading reliability provides lower total lifecycle cost
- Network agnostic Ku-band terminal solution saves re-provisioning time and cost



Ka-Band Antenna Systems

- Light weight fully integrated 3 LRU system
- Broad frequency coverage for c military applications
- Real time switchable dual polarization
- Operates on global Ka-band HTS satellite networks
- DO-160 qualified



Tactical GPS

- Compact, rugged enclosure
- Contains a rubidium oscillator and low phase noise cleanup oscillator
- Remote configuration and monitoring via Ethernet and RS-232
- Standard C/A-Code GPS or optional SAASM GPS



mmW Antenna

- Full range of millimeter wave antenna products and technologies including aperture, reflector, and lens-based
- Standard models from 18 to 325 GHz
- Custom designed antenna arrays available
- Additional offerings: polarizers, orthomode transducers, monopulse comparators, and waveguide rotary joints



Positioners/Controllers

- Fixed and mobile positioning systems
- Man-portable to 7 meter installations
- Reflector and feed assemblies reaching 0.5 to 325 GHz



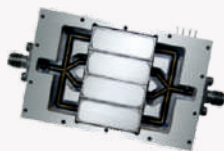
NTP Servers

- Designed for time synchronizing networks
- using IRIG-B as the time reference
- Accepts a fiber optic or wireline IRIG-B time code
- Time synchronization of SIPRNET and NIPRNET
- Remote configuration and monitoring via Ethernet and RS-232



Switched Filter Banks

- Offer high selectivity in broadband systems
- Optimized integration provides low loss and fast switching speed in a rugged package
- Ideal RF conditioning solution for frequency conversion and signal intelligence applications



Integrated MW Assemblies

- Includes up/down converters, power amplifiers, modulators/demodulators, broadband, switched filter networks, LNA's, oscillators, switches, synthesizers, ferrite isolator and receiver protectors
- Designed for dynamically challenging environments
- Custom form factors



Comb Generators

- SRD-based & NLTL-based comb generators
- Active & passive multiplier chains
- Up to full waveguide bandwidths
- Standard models available through 305 GHz



Up/Down Converters

- Single and multi-channel
- Compact size, up to 325 GHz
- Control at high dynamic range
- Phase and gain matching
- MIC/SMT content optimized for performance & cost
- Radiometer and RADAR front ends



Wideband Antennas

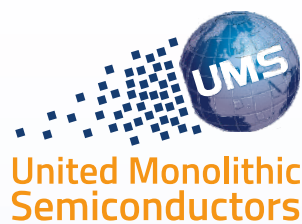
- Used as stand-alone antennas or reflector feeds in parabolic antenna systems
- Standard models from 18 to 110 GHz
- Vast array of omnidirectional antennas



mmW Amplifiers

- Broad array of power amplifiers (AMP) up to 16-way, and low noise amplifier (LNA) solutions
- Standard models from 18 to 110 GHz
- GaN, GaAs, InP, and SiGe technologies
- Custom variations of standard millimeter-wave amplifiers, as well as multi-component assemblies and solutions





GaN RF PRODUCTS

From
transistors
to packaged
MMICs



Boost your design with UMS

GaN & GaAs
solutions for
Multipurpose
Phased Array
Radar

X-BAND AESA CHIPSET



Field proven performance Reliable technologies

- High efficiency
- High accuracy (on module & phase)
- Single and multichip solutions
- European source
- Qualified package technology
- In-house technologies qualified for Space



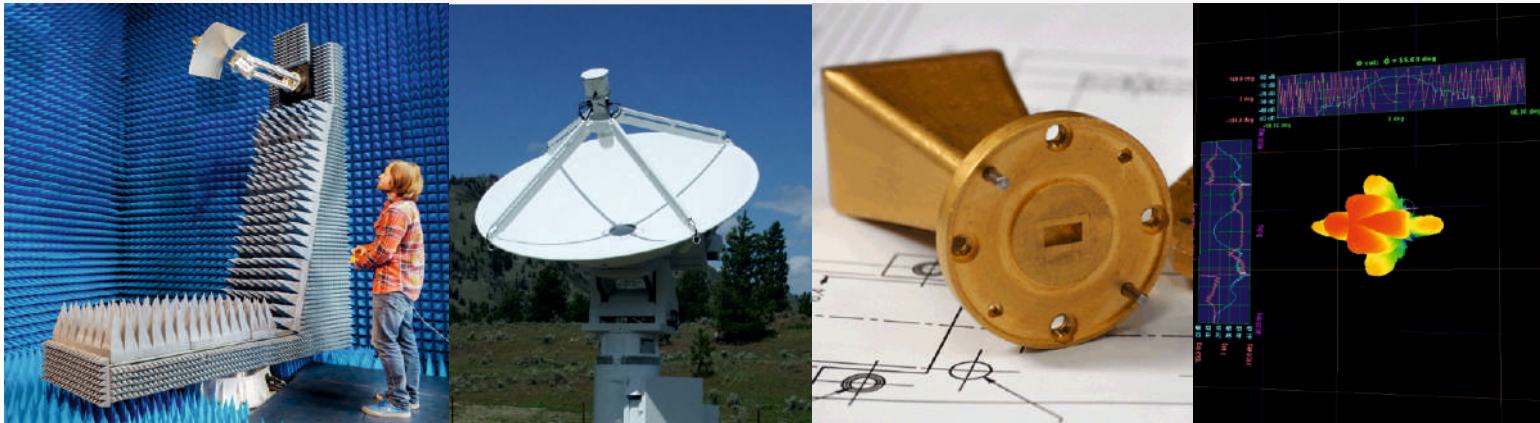
Build your own solution with UMS

www.ums-rf.com





STEATITE
COMPUTING - POWER - COMMUNICATIONS
A Sattek Group Company



MICROWAVE ANTENNAS, SUBSYSTEMS AND CONSULTANCY

UK manufacturer of high-performance microwave and RF antennas

Custom & bespoke antennas

As a world-class manufacturer of custom designed antennas we are able to provide complex systems based around our customers specific requirements.

At the outset, we ensure that we obtain a thorough understanding of the required specifications, enabling us to design and build an antenna that meets these requirements as closely as possible. Using our in-house testing facilities we are able to verify and validate that the initial requirements have been achieved.

Our experience and wealth of expertise enables us to demonstrate a proven track record of delivering projects on time and on budget.



Antenna products

In addition to our custom designed products, we offer an extensive range of commercial-off-the-shelf (COTS) products based on our own design and engineering. Our antenna products include the following:

- EMC & HiRF
- Horn & lens
- Omnidirectional
- Reflector
- Spiral & sinuous
- Elint
- Positioner



Repair and refurbishment

Beyond the development of cutting edge technology we also provide a full repair and refurbishment service. This can often result in considerable cost and time savings. We have won awards for our refurbishment work, testament to the skill and attention that is afforded to each project.

Utilising our in-house test chamber, we are able to fully test the refurbished device to ensure it performs in line with the original specification.



STEATITE
COMPUTING - POWER - COMMUNICATIONS



MOBILE AD-HOC NETWORK



Wave Relay® Hardware: MPU5 Radio

What are the key hardware components that go into making a Wave Relay® network?

Wave Relay® MPU5 Radio

The Wave Relay® MPU5 is the most advanced, most scalable, and most efficient Mobile Ad Hoc Networking (MANET) radio in the world.

The MPU5 is the result of years of meticulous design and engineering - from the interchangeable frequency module to the multi-functional side connectors - to ensure optimal functionality and performance for you and your team. Designed to withstand extreme conditions in the harshest environments, the MPU5 is rated to the highest standards for temperature, water immersion, shock, salt fog, and security.

The MPU5 thrives in complex RF environments, where its 3x3 MIMO technology uses reflections from obstructions to move your data even faster. The self-forming / self-healing Wave Relay® MANET technology routes data around obstacles, maximizing network performance and mobility.

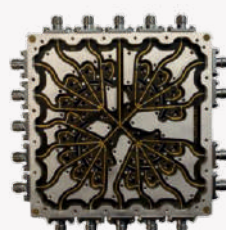


Solid State Switches

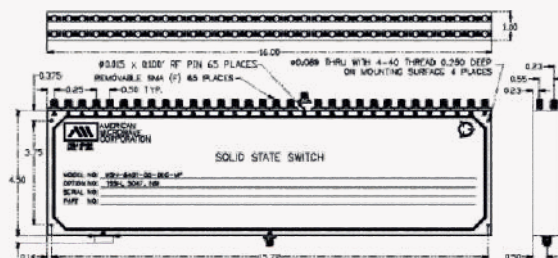
Key Features

- Frequencies DC to 40 GHz
- SPST to SP 64T Configurations
- Reflective and Absorptive
- Low Insertion Loss
- High Isolation
- Optimized Intercept Points
- Nano Second Switching Speed

SP18T



SP64T



SP8T



Applications

- ELINT/SIGINT
- Radar/Telemetry
- Satellite Systems
- Microwave Links
- Test & Instrumentation
- 5G/Wireless

Differentiators

- Ruggedized
- Small Size
- Field Replaceable RF Connectors
- Application Specific design unique RF interface & control



Detector Log Video Amplifiers (DLVA's)

Key Features

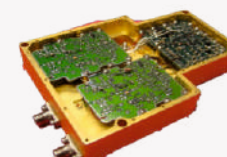
- Frequencies Up to 40 GHz
- Dynamic Range up to 75 dB
- CW Immunity
- Flat Response

Applications

- Electronic Warfare Systems
- Receiver Warning Radar

Differentiators

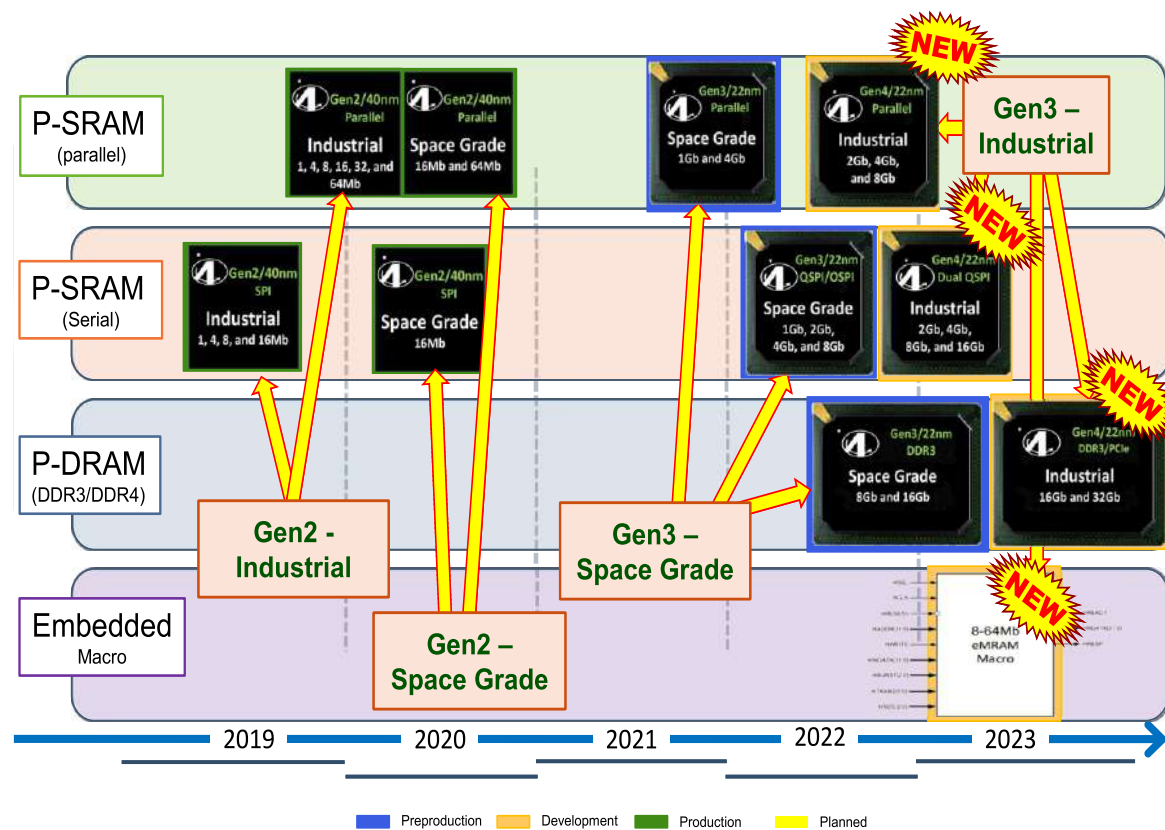
- Fast Rise Time
- Excellent Sensitivity
- Small Form Factor





avalanchetechnology

Avalanche Roadmap at a Glance

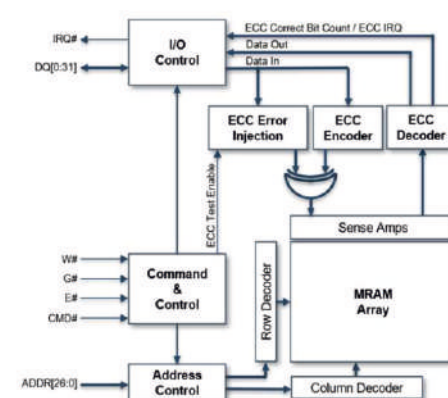


Avalanche MRAM – Speed of SRAM, density approaching NAND/DRAM, but with Hi-Rel Persistence & Radiation Immunity

What Makes Avalanche MRAM Different?

The Best SWAP-C (Size, Weight, Power, Cost) profile of any High-Reliability NV-RAM, **especially for Space!**

- Supports Unified Memory Architecture
- Designed for the **Highest Reliability**:
 - **On-chip ECC** (56-bit data path for 32-bit data)
 - With Differential MRAM 112-bit data path per 32-bits
 - **Error-free** non-destructive read w/unlimited endurance
 - Error-free writes with:
 - **10^{16} endurance for space**
 - **10^{14} endurance for industrial**
- **Ultra Low Power** (as low as 10mA per Gb)
- Compact differential MRAM Structure (2 MRAMs per bit)
- Terrestrial applications can leverage Hi-Rel benefits!!



Components



PRODUCT PORTFOLIO

The Oxley range of components are high quality, robust and reliable solutions, designed to meet tough military and aerospace specifications. Products are developed in-house using sophisticated design, manufacture and assembly techniques and supported on site by CNC machining, electroplating, a prototype model shop, tool room and dedicated test area.

EMI



Single Line Filters



Multi-Line Filters



Filter Array



Filtered Connector



Planar Capacitor Array



Filter incorporating Transient Voltage Suppression (TVS)

Interconnect



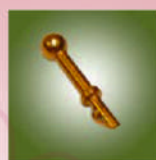
SMOX



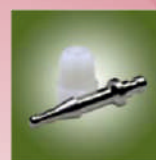
Kinky Pins



SMALE



Snaplox



Barb Cone Lock



Plugs & Sockets

Panel Lamps



Panel Sealed Indicators



Panel and Body Sealed Indicators



Sub-Miniature



Rear Mounting Indicators



Segmented Indicators



Sub-Miniature Cone Lock



T1 1/4 Bulb Replacements



8mm Mounting



6.3mm Mounting



10mm Mounting



BA9 Bulb Replacements



T1 Bulb Replacements

Applications



INNOVATION YOU CAN TRUST

LED LIGHTING

NIGHT VISION

OPTICAL FILTERS

LED INDICATORS

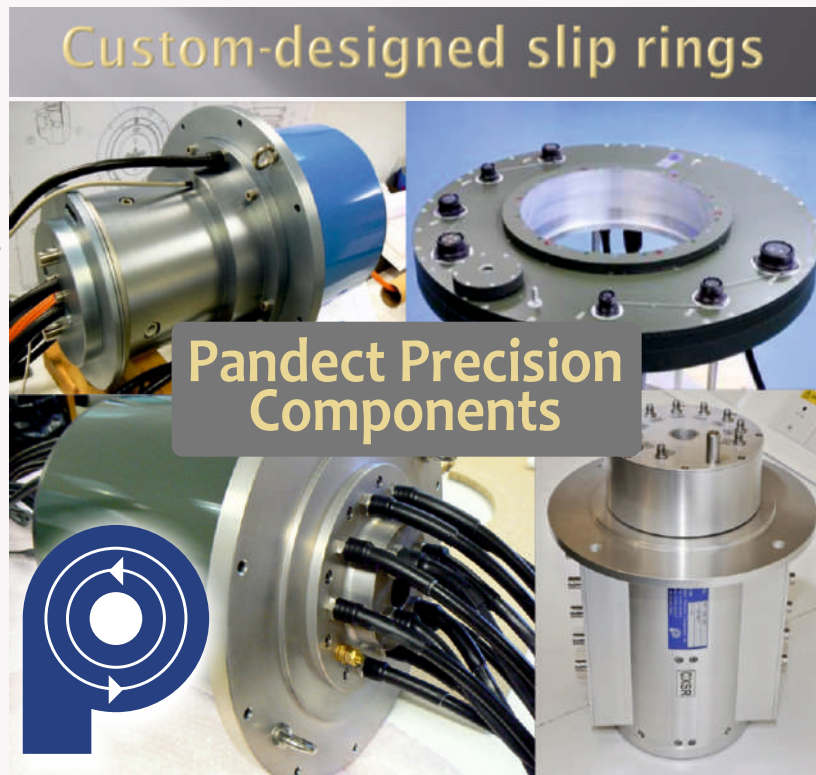
EMI PROTECTION

INTERCONNECT

DATA CAPTURE

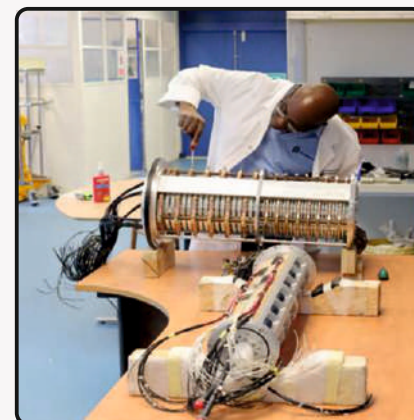
Defence

- ☐ Missiles: SAM/ASM/AAM/SSM
- ☐ Helicopter air data systems
- ☐ Target acquisition and surveillance systems
- ☐ Marine weapon and sighting systems
- ☐ Military vehicle sighting systems
- ☐ Vehicle turret interfaces
- ☐ Satellite-on-the move
 - Electrical
 - High data rate optical/electrical without FORJ's
- ☐ Sonar



Radar

- ☐ Civil radar systems for air traffic control
- ☐ Land based military radar systems
- ☐ Marine radar systems
- ☐ Airborne navigation radar systems
- ☐ Ground-based weather radar.
- ☐ We often supply slip ring + uwave rotary joints into these applications.
- ☐ Hydraulic/pneumatic joints for cooling are sometimes included in our solutions.





EMI SHIELDING SOLUTIONS

ENVIRONMENTAL SEALING

MICROWAVE ABSORBERS

CORROSION-RESISTANT SOLUTIONS

THERMAL GAP FILLER PAD

INNOVATIVE BESPOKE SOLUTIONS



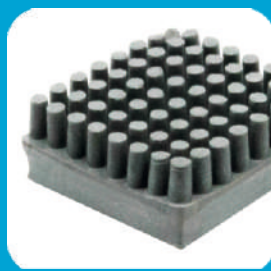
Conductive elastomer



Corrosion-resistant solutions



Environmental sealing solutions



Thermal gap filler until 8.5 W/m.K



Microwave absorbers

PRODUCTS & SOLUTIONS FOR **ALL TECHNOLOGIES**



Aeronautical | Defense



Energy



Railways



Aerospace



Automotive



Medical



Discover all our solutions on our website



[illegible]

Human Machine Interface Solutions

Taking Control Of Technology



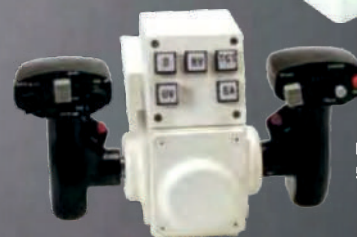
CROWS II Remote Weapon Station Control Grip
1505 Series



FMCU™ (patented)



STRYKER Remote Weapon
Station Control Grip
502 Series



Future Combat Systems Control
540 series



Hall-Effect Control ITSS Marine LAV
502 series

Services / Capabilities

- >> ERGONOMIC / HUMAN FACTOR PRODUCTS AND SOLUTIONS
- >> OFF-THE-SHELF PRODUCT DESIGN AND CUSTOMIZATIONS
- >> CUSTOMIZED PRODUCT DESIGN
- >> RAPID PROTOTYPING
- >> LARGE VOLUME PRODUCTION
- >> MECHANICAL, ELECTRICAL AND SOFTWARE DESIGN CAPABILITIES
- >> REVERSE ENGINEERING
- >> BUILD TO PRINT
- >> MARKET-BASED R&D
- >> TECHNOLOGY ANALYSIS
- >> NEW PRODUCT DEVELOPMENT
- >> SYSTEMS ENGINEERING
- >> ESS TESTING
- >> PRECISION ELECTROMECHANICAL ASSEMBLY
- >> QUALIFICATION TESTING

Offerings

HMI Devices:

- Miniature Joysticks
- Hand Controls
- Control Grips and Handles
- Vehicle and Flight Controls
- UAV, UGV, USV Controls
- Weapons Controls
- Payload/Sensor Controls
- Burners/Commanders

Human Systems Integration:

- Tablet based Systems
- Portable C2
- Dismounted C4
- Situational Awareness/SR
- Soldier Systems
- System/System Interfacing

Customers

Defense Primes:

- Raytheon
- Northrop Grumman
- General Dynamics
- Boeing
- Lockheed Martin
- BAE Systems
- ST Kinetics
- General Atomics

Tier One:

- ORS Technologies
- Kongsberg
- L3
- FLIR Systems
- QinetiQ
- Thales

Differentiators

HMI Devices:

- Traditional/Well Known Approach -- "Manning the Equipment"
- Patented Non-Contact Sensor Technology
- Broad Product Technology Range -- Optimal Solutions
- CONOPS backwards Solution Process
- Extensive Military Program Experience and Knowledge
- Advanced Common Controllers including Gaming Style Controls
- "Smart" Controls (System, Prognostics, Diagnostics, etc.)
- Innovative, Modular Design Concepts
- SWaP

Human Systems Integration:

- Innovative Approach -- "Empowering the Man"
- Portable Controls and Systems -- Human Factors optimized
- CONOPS backwards Solution Process
- Custom capability for existing Systems -- Human Factors optimized
- Rugged hand-held Tablet Systems with Control capability
- Rugged and Compact Systems Interface Boxes
- SWaP

Application Areas of Expertise (CONOPS)

- Platform Mounted Weapons Systems Fire Control Systems
- Unmanned Systems Ground & Payload Control Stations
- Space Flight
- Airborne Command and Control Systems
- Flight Controls
- C4ISR
- Military Simulation

- Remote Weapon Systems/Remote Turret Fire Control Systems
- Cockpit Control Controls/Cockpit Controls
- Ground Base Protection
- Surveillance including Recon vehicle control
- General FLIR control
- Command or Men-Wearable Systems Control
- Classified Programs (Facility Clearance)

MSI Best Practices

- AS9100 Rev. C Certified
- Lean Manufacturing/6S
- LAUNCH based Customer Interaction/teaming concept
- CONOPS backwards solution approach
- Human Factors Engineering
- Supply Chain Management
- Active PMO

Development Areas

- Mobile Hand-held Systems
- Wearable Devices and Systems
- Advanced input methods (Voice, Gestures, etc.)
- Real Time Data Analytics
- Embedded Systems
- Classified Business



EXTREME RELIABILITY
EXPECT THE BEST



-60°C to +230°C

X-REL is an EASii IC business unit selling high reliability components for harsh environments
Qualified for 5 years under temperature from -60°C to +230°C.

Expertise on High Temperature & Reliability IC design - EN9100 for Aero and Space and ISO9001
Most X-REL products are available in die and packaged

POWER MANAGEMENT

- XTR3001x PWM Controller
- NEW** XER30019 PWM Controller
- NEW** XTR3002x Buck DC/DC
- XTR2041x 35V N-Channel Power MOSFET with Floating Driver
- XTR2081x 80V Low-side N-Channel Power MOSFET with Driver
- XTR7001x 1.5 A Low-Dropout Voltage Regulator
- XTR7002x High Input Voltage 2A Positive LDO Regulator
- XTR2602x Isolated Intelligent Gate Driver
- XTR2501x Power Gate Driver
- XTR2502x Intelligent Gate Driver
- XTR2541x 35V Floating Driver
- NEW** XTR7501x Positive Series Voltage Regulator
- NEW** XTR7503x Negative Series Voltage Regulator
- XTR431 Programmable Shunt Regulator

* Plastic package up to +175°C

CLOCK & TIMING

- XTR65x Versatile Timer
- XTR6001x Crystal Oscillator Driver

DISCRETES

- XTR1N04xx/XTR1N08xx General Purpose Diodes
- XTR1K1210 10A, 1200V SiC Schottky Diode
- XTR2N0x07 Small-Signal P- and N-Channel MOSFETs
- XTR2N03xx/XTR2N05xx P-Channel Power MOSFETs
- NEW** XER2N0525 P-Channel Power MOSFETs
- XTR2N04xx/XTR2N08xx N-Channel Power MOSFETs

* Plastic package up to +175°C

LOGIC

- XTR54000 Reconfigurable Logic Gates
- XTR5001x Bidirectional Level Translators
- XTR5417x/XTR541G7x Edge-Triggered D Flip-Flop

INTERFACING & TRANSCEIVERS

- XTR4001x Isolated Two Channel Transceiver

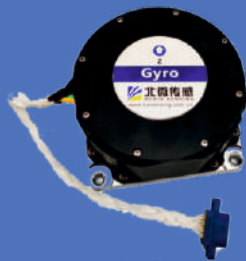


EASii IC / X-RELSemiconductor BU
90, avenue Leon Blum, 38100 Grenoble, France
Tel. : +33 (0)4 56 580 580
Sales: sales.xrel@easii-ic.com



www.x-relsemi.com

Inertial Sensors Expert

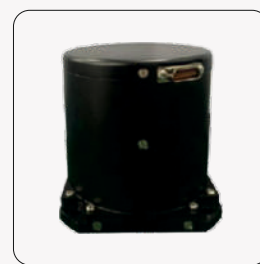


Electro-optical pod technology and its pod is an important part of photoelectric reconnaissance warning technology and equipment, but also the core of the UAV reconnaissance equipment, it will fill the manned aircraft tactical reconnaissance role, because the electro-optical pod is carrying on the movement of carrier, the carrier of the rolling and vibration will affect the all kinds of photoelectric sensors, optical axis jitter, cause blurred images, the phenomenon of positioning are not allowed to be, this is not allowed, so the most basic and key technology of photoelectric pod is visual axis stable technology.

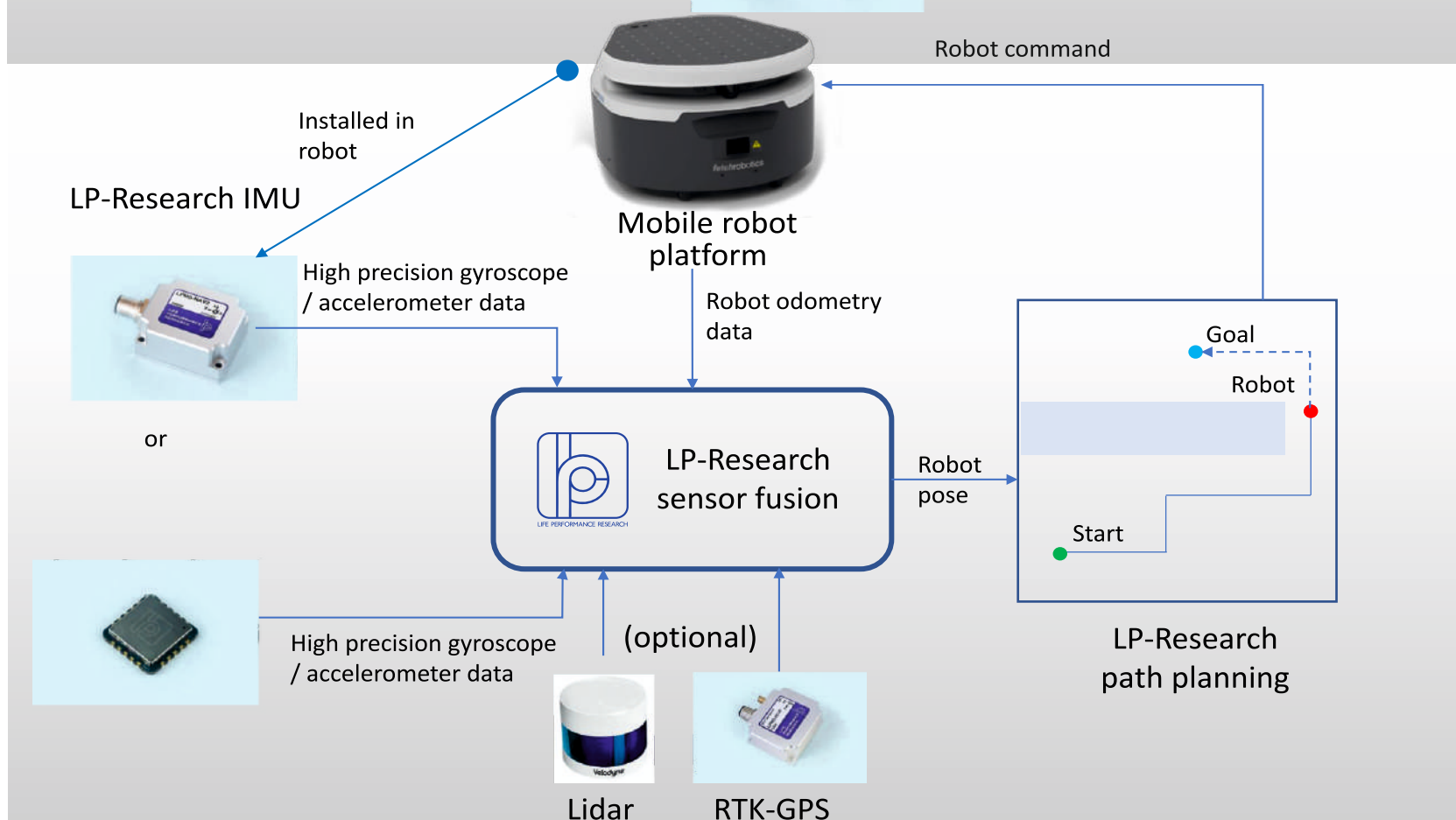
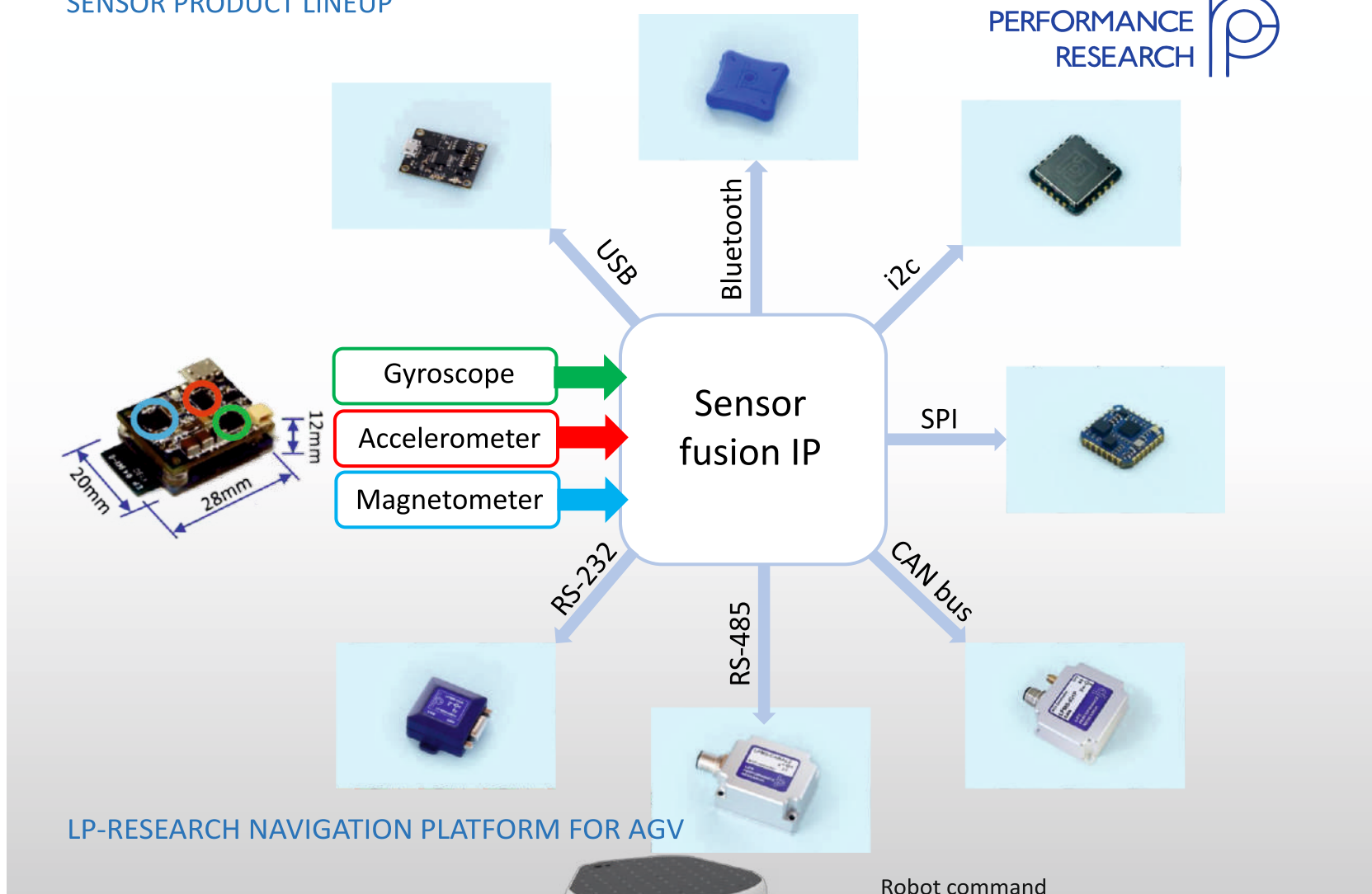
UAV electro-optical pod usually adopts two axis framework structure, which can realize the rotation of the azimuth and pitching direction, through AH500 high precision navigation position reference system, accurately measure the pod's attitude information, and feedback to the control system, combined with multi sensor data on unmanned aerial vehicle (UAV), realize the goal of capturing and tracking.



Inclinometer
IMU
Digital Compasses
Attitude & Heading Reference System
FOG Integrated Navigation System
MEMS Gyroscope/MEMS Accelerometer



SENSOR PRODUCT LINEUP



AEROSPACE



Space Vehicles



Radar Monitoring



UAV & UUV



Rotorcraft



Load Measurement



Railway Applications



Vibration Monitoring



Marine Vessel

INDUSTRY



Precision Control



Real-time Monitoring



Energy Applications



Calibration of Robots



Long-term Monitoring



Surface Measuring



Micro-Tunneling



Wind Turbines

CIVIL ENGINEERING

INCLINOMETERS



Force Balance



Wireless



MEMS



Digital

ACCELEROMETERS



Force Balance



MEMS



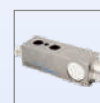
LOAD CELLS



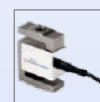
Compression



Shear



Compression & Tension





MICRO D CONNECTORS

TWIST PIN CONTACTS

MIL-DTL-83513

1.27MM PITCH



NANO D CONNECTOR



MIL-DTL-32139

0.635MM PITCH

TWIST PIN CONTACTS



SUNKYE INTERNATIONAL WAS ORIGINALLY DEVELOPED IN THE EARLY 1950'S AND WAS ONE OF THE TWIST PIN/ MICRO D/ NANO D CONNECTOR COMPANIES TO LICENSE THIS TECHNOLOGY AND IMPROVE IT.



European leader in piezoceramic audible components

Buzzers & Transducers



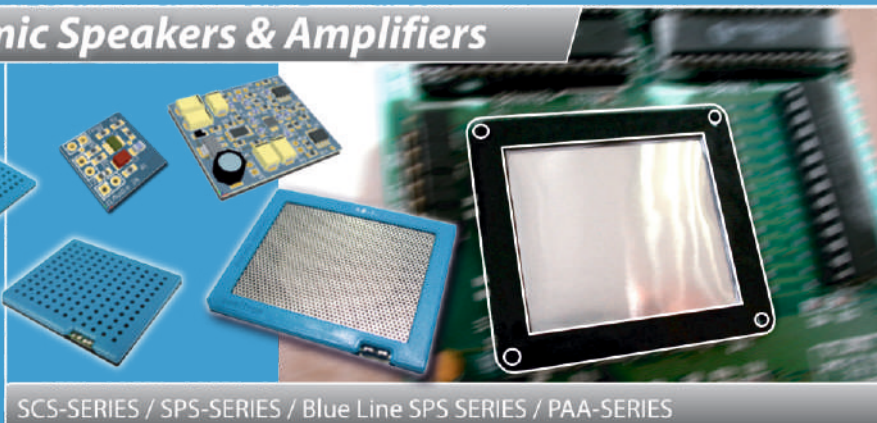
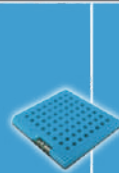
STANDARD SERIES / SMA-SERIES / SMAT-SERIES / SMB-SERIES

Alarms & Sirens



SAS-SERIES / SAP-SERIES / SMAC-SERIES / SXL-SERIES / SDS-SERIES

Piezoceramic Speakers & Amplifiers



SCS-SERIES / SPS-SERIES / Blue Line SPS SERIES / PAA-SERIES



® : registered trade name Patents: Several patents are protecting the original studies and development.
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Certificate Registration
No. 12 100 32080
Audit Report No. 70725316

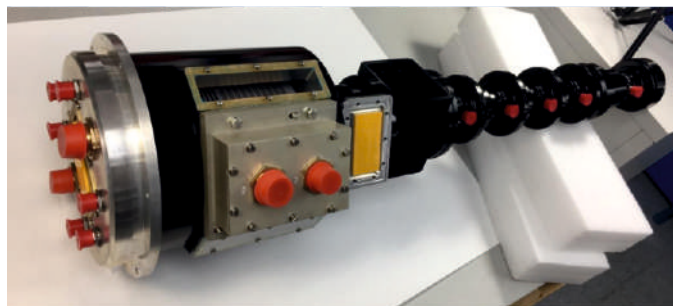


RF & Microwave Rotary Joints

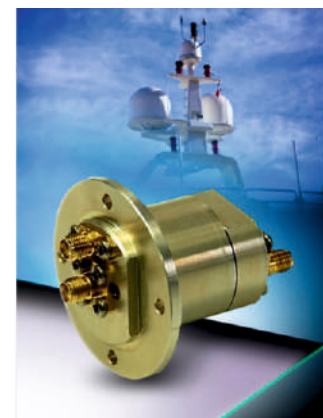
- Link Microtek has manufactured rotary joints for over 15 years and has many thousands of units in the field (>3000)
- Link designs, fabricates, assembles and tests all units from its main base in Basingstoke UK drawing upon Marconi legacy.
- Link produces RF & Microwave waveguide and coaxial rotary joints – Single, multichannel, DC-40GHz, Slipring assemblies
- Applications – Military & commercial
 - Satcom, Radar, EW, Test, Antenna systems, Medical
 - Leonardo, DataPath, BEL, Airbus, Vislink, BAE, Pandect, Tata, L&T
- Focus areas:- Large Multichannel Radar devices, Miniature SOTM rotaries, Space qualified rotaries.
- We team with Pandect for Sliprings.



7 channel Radar Rojo with integrated Slipring



SOTM Dual Rotaries



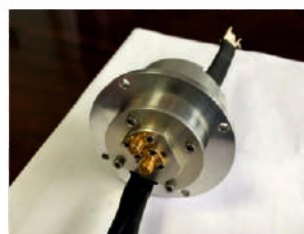
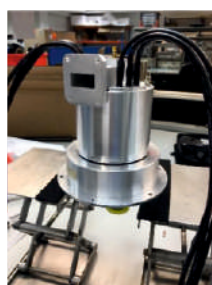
Small Rotary Joints



Large Rotary Joints



With Sliprings





Complete Coaxial Cable



smiths interconnect

bringing technology to life

Cable Assemblies - RF Coaxial Products



ASR/ASR-F

- Premium Grade VNA Test and Measurement Cable assemblies
- Low Loss Construction, Available in flexible and Semi-Rigid Designs up to 50GHz



Lab-Flex®

- High-Performance, general use, Low-Loss Cable series
- Low Loss Dielectrics with 3 layers of braids for durability and connector retention



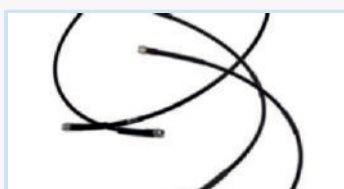
Lab-Flex® S

- Low-Loss Stranded Center conductor cables for Harsh Environments and high flexure rates including Aerospace and Test and Measurement applications



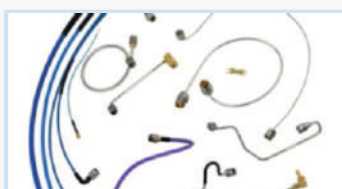
Low-Loss S/R Cables

- Premium Semi-Rigid cable assemblies
- Single piece metal outer conductors provide excellent Cable shielding and radiation resistance for Space Flight applications.



Titan-Flex®

- High Volume bench test applications, RG replacement cables
- Unique Braiding designs for durability and improved electrical performance.



Semi-Conform-Flex

- Standard Size (.047, .086, .141) cables for several applications ranging from Defense to test and measurement.
- Products include Semi-Rigid, BJ cables and Mini-Flex Family



SpaceNXT™ Q

- Flexible Space Qualified low-loss cable assemblies
- Jacket materials qualified to provide up to 100 Mrads radiation resistance and meet all NASA/ESA outgassing specifications



Lab-Flex® T

- Low-Loss, Phase Stable over temperature
- With unique foamed dielectric, cable provide excellent phase stable performance for radar and other phase critical applications.

Applications

▪ Functional Needs of other RF Components

- Provides a high frequency electrical signal transmission line between electrical components and systems.

▪ Overall Impacts Module and Sub-System Architecture

- Power Amplifier (SSPA) or (TWTA)
- Low Noise Amplifier (LNA)
- Up/Down converter (BUC) or (BDC)
- Transmit/Receive Module (TRM)
- RF plumbing interconnect between individual equipment modules



▪ End Use in Higher Level RF Systems

- Space Satellites
- Defence Radar
- Civil Radar
- SATCOM (Ground and Space)
- Telecoms Base station installations
- Test & Measurement – Lab Bench Top and System Automation
- Anechoic Test chambers



Product Portfolio



Brands					
Products	High Reliability Capacitors	Multi-Layer Capacitors (MLC)	Single Layer Capacitors (SLC)	Trimmer Capacitors	Microwave Products
Applications	High Reliability, Zero Failure (Implantables)	High Q, High Temp, High Voltage	Optical Networking	Variable Capacitance, Test & Meas. (MRI)	RF Filtering, Electronic Warfare, 5G
Markets	Medical Devices, Military, Space	Industrial, Telecom, Automotive	Military, Telecom	Medical Devices	Military, Telecom

High Voltage MLCC Solution

Typical diagram for EV/PHEV

Battery Management System

0805-3640
1KV-4KV X7R
100pF-10nF
Open mode

Typical Spec

- 0805/1KV/1nF/X7R
- 1206/1KV4.7nF/X7R
- 1206/2KV/1nF/X7R
- 1210/1KV/8.2nF/X7R
- 1812/2KV/4.7nF/X7R
- 2220/Y2X1/2.2nF/X7R
- 3640/4KV/3.3nF/X7R

On Board Charger (3.3KW-6.6KW)

1812-3640
Safety Y2/X1
250V-630V C0G
250V-2KV X7R
X2Y EMI filter

Typical Spec

- 1812/2KV/2.2nF/X7R
- 1812/2KV/10nF/X7R
- 2220/630V/1uF/X7R
- 2220/1KV/0.1uF/X7R
- 2220/Y2X1/10nF/X7R
- 2225/630V/39nF/C0G
- 3640/1KV/1uF/X7R
- X2Y 1812/50V/470nF

DC/AC Converter (typical 1.5KW)

1812-3640
250V-1.2KV X7R
100nF-1uF

Typical Spec

- 1812/250V/1uF/X7R
- 2220/630V/1uF/X7R
- 2220/1KV/470nF/X7R
- 3640/1.2KV/470nF/X7R

DC/DC Converter (2.5KW-3KW)

1812-3640
250V-1.2KV X7R
100nF-1uF

Typical Spec

- 1812/250V/1uF/X7R
- 2220/630V/1uF/X7R
- 2220/1KV/470nF/X7R
- 3640/1.2KV/470nF/X7R

PTC Heater Controller

1206-3640
Safety Y2/X1
630V-1KV X7R
1nF-1uF

Typical Spec

- 1206/1KV/1nF/X7R
- 1812/1KV/100nF/X7R
- 2220/Y2X1/1nF/X7R
- 2220/630V/1uF/X7R
- 2220/1KV/470nF/X7R
- 3640/1KV/1uF/X7R

some of our customers

Most of our customers operate in RF Microwave and wireless communication field and are big companies characterized by large scale projects and high volume quantities. These firms play very important role in Defense, Aerospace and Telecom industry in Turkey.

Some of them work as subcontractor to major defense primecontractors such as Boeing, Lockheed Martin, Northrop Grumman, Thales, Airbus DS and BAE systems

MILITARY & AEROSPACE

ASELSAN
TAI
AYDIN YAZILIM
HAVELSAN
HAVELSAN EHSIM
HAVELSAN TEKNOLOJİ RADAR
FOTONİKS
KATMERCİLER
FNSS
ROKETSAN
SDT SPACE & DEFENCE TECHNOLOGIES
METEKSAN SAVUNMA
ATEL AR-GE
TUBITAK BILGEM
TUBITAK UZAY
TUBITAK SAGE
CTECH
OTOKAR
SAVRONİK
VESTEL SAVUNMA
RMK MARINE
RST TECHNOLOGIES
TUALCOM
ESEN SİSTEM

TELECOMMUNICATION

NETAŞ
PROFEN
EPROM
TELEKOM MÜHENDİSLİK
TURKCELL
TURKCELL SUPERONLINE
SVS TELEKOM
KAREL
HUAWEI
PALS
ARASKOM
PAVO
USKOM
PAGETEL

INDUSTRIAL AUTOMOTION / AUTOMOTIVE

PHOBOS
İROB
SK ROBOTICS
MND
OTTOMOTIVE MUHENDISLIK
FNSS
OTOKAR
BMC
KATMERCİLER
BOZANKAYA
KARSAN
TURK TRAKTOR
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ALTINAY
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ASPILSAN ENERJİ
GERSAN
TOGI
HIDROMEK
TAKOSAN
FORD OTOSAN
TOGG

We can technically assist buyers as well as engineers and get involved with the customer from the design-in stage to the delivery of the product through completion of production.

Market Segments

Military Electronics



Avionics



Space



Telecom



Industrial Automation/Robotics



Automotive / Electric Vehicles



Railways



Medical



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Telekomunikasyon
San. ve Tic. Ltd. Şti.**

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