Linecard NORDIC 2023

Protec GmbH
High-Rel Electronic Components

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Protec GmbH was founded in 1976 and is successful in the sales of High Reliability components.

We are particularly specialised in highly qualified components for industrial, military and space applications.

In instances of obsolescence and supply problems, we can also offer our customers effective solutions with our extensive product and market knowledge.

Our customer orientated warehouse, equipped with a modern ESD protection system, guarantees reliable component supply.

With our design-in and market orientated expertise, we can provide long term support for your projects and applications.

Through our distributor and rep strategy, we are the "extended arm" of our Manufacturers. When required we will put you directly in touch with our manufacturer's specialists.

Our first priority is a long term, successful partnership with our customers and manufacturers.

AEM

AirBorn

APOGEE SEMICONDUCTOR

avalanche technology

ARQUIMEA

AXTAL
a Q-TECH Company

BAE SYSTEMS
INSPIRED WORK

FLUX

GSI TECHNOLOGY

Honeywell

HOLT INTEGRATED CIRCUITS INC.

MACOM
Partners from RF to Light

NanoXplore

Q-TECH CORPORATION

SEMICOA
A DIVISION OF OSI OPTOELECTRONICS

smiths interconnect

SKYWORKS

TELEDYNE e2v
HIREL ELECTRONICS
Everywhereyoulook

VPT COMPONENTS

viking TECHNOLOGY

Source Surveillance Services, Inc.

dpc
Digital Programmable Controller

Protec GmbH is a specialized distributor of high quality products for the electronics industry, particularly for the Space, Avionic, High Voltage, High Temperature and niche industrial markets.

**We support customers and manufacturers with our expertise in:**
 - **EUS requirements and licensing processes**
 - **CoC requirements**
 - **Design in support**
 - **Export classifications and rules**
 - **Product trainings**

Support and understanding of terms like SLDC, LOT acceptance, PIND, TID, ELDRS, SEE, SEU, SEL, Proton testing and many more industry specific terms.

Responsibilities by Country / Manufacturer	Nordic			
	Denmark	Sweden	Norway	Finland
AEM Inc.	•	•	•	•
AirBorn	•	•	•	•
Arquimea	•	•	•	•
Apogee	•	•	•	•
Avalanche Techn.	•	•	•	•
Axtal	•	•	•	•
BAE Systems	•	•	•	•
FLUX		•	•	•
Honeywell	•	•	•	•
HOLT IC	•	•	•	•
GSI Technology	•	•	•	•
NanoXplore	•	•	•	•
Macom			•	
Q-Tech	•	•	•	•
Semicoa (OSI location)	•	•	•	•
Skyworks DS	•	•	•	•
Smiths Canada	•	•	•	•
TAS DPC	•	•	•	•
SSSI	•	•	•	•
Teledyne e2v	•	•	•	•
VPT Components	•	•	•	•
Viking Technology	•	•	•	•

AEM

| HighRel Fuses	50 - 180 V	125mA - 20A
HighRel Chip Beads	30 - 1000Ω	200mA - 4A
TWM	RoHs to Tin Lead Conversion	

AirBorn
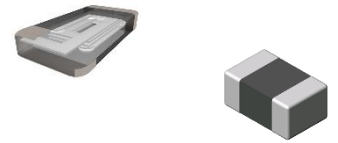
Nano D	Rugged Nano-D metal shell - exceed MIL-DTL-32139	9-91 contacts
Micro D / High Speed	Rugged Micro-D metal shell - exceed MIL-DTL-32139	9-128 contacts
Macro D	Rugged (3A up to 42A per contact)	8-150 contacts
High Speed Rectangular	Rugged - vertical board-mount, right angle board-mount, cable I/O, and flex circuit mounting	40-500 contacts
SInergy	Rugged - modular hybrid solution 1-5 configurable bays	up to 25Gbps
Stackable	high-density, board-to-board stacking	28-200 contacts
Rectangular R&Z Series	PCB Connectors	10-604 contacts
Z-Axis Interposer	high-density, board-to-board or flex circuit stacking	20-175 contacts
Circular	Rugged - micro-miniature circular - similar performance as D38999 connectors more compact & lighter package	up to 10G
Flexible Assemblies	highly reliable, flexible, printed circuit assembly single-sided, double-sided, multi-layer, rigid-flex	
Cable / Harness	copper, RF and more — terminated with any connector	
Active Optical Cables	fully-qualified, Space-Rated Active Optical Cable (SAOC®) & a Rugged Active Optical Cable (RAOC®)	

ARQUIMEA

LVDS	EPPL ➔ Quad Driver / Reciever and Dual Transciever	ESA Qualified

avalanche technology
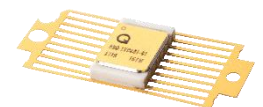
Parallel x32 (Gen 3)	1Gb / 4Gb	75krad
Serial D-QSPI (Gen 3)	1Gb / 2Gb / 4Gb / 8Gb	75krad
Serial QSPI (Gen 1)	4Mb / 8Mb	75krad
Serial (Gen 2)	16Mb	75krad
Parallel x16 (Gen 2)	16MB / 32Mb / 64Mb	75krad

Protec GmbH
High-Rel Electronic Components

Linecard

APOGEE SEMICONDUCTOR
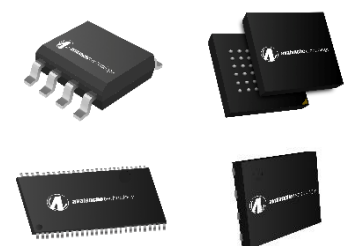
| Logic - AND	Quad 2-input / Triple 3-input	30kRad / 80MeV
Logic - NAND	Quad 2-input / Quad Schmitt 2-input / Triple 3-input	30 Krad / 80MeV
Logic - OR	Quad 2-input	30 Krad / 80MeV
Logic - NOR	Quad 2-input / Triple 3-input	30 Krad / 80MeV
Logic - XOR	Quad 2-input	30 Krad / 80MeV
Logic - Inverter	Hex Inverter / Hex Schmitt Inverter / Hex Open-drain Inverter	30 Krad / 80MeV
Logic - Voter	Dual 3-input Majority Voter with Error Output	30 Krad / 80MeV
Logic – Flip-Flop	Dual D Flip-Flop with Async. Clear	30 Krad / 80MeV

AXTAL
a Q-TECH Company
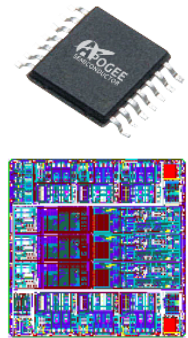
| OCXO ESCC	±0,005ppm / Ultra Low Noise	10MHz to 150MHz
TCXO	±0,5ppm	1MHz to 2,5GHz
VCXO	±5ppm / Low Noise	1MHz to 1,5GHz
SAW Oscillator	±350ppm	500MHz to 1,6GHz
Quartz Filter	±1ppm	10MHz to 100MHz
PRECISION CRYSTALS	SC, IT and AT-cut crystals for frequency control, instrumentation , military, space and other markets	Compliant to ESCC3501
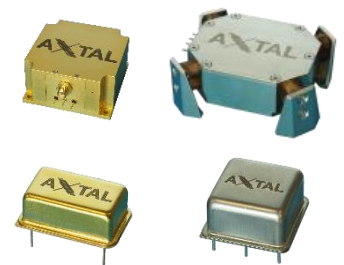
BAE SYSTEMS
INSPIRED WORK

SRAM	4M / 16M / 20M / 64M / 320M	100 / 300krad
PROM	256k	100 / 300krad
C-RAM	2M / 4M	100 / 300krad
Processor	RAD750 Power PC & RAD55xx SoC	100 / 200krad

HOLT INC. INTEGRATED CIRCUITS
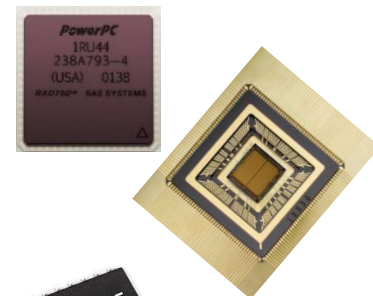
| ARINC 429	Line Drivers & Receivers, Protocol ICs Parallel & SPI
MIL-STD 1553	Integrated Terminals, Transceivers, Encodes and Decoders, Transformers
Discrete and More	Discrete to Digital, CAN, RS485 / 422, ARINC 717, Ethernet, Analog Switches

Source Surveillance Services, Inc.
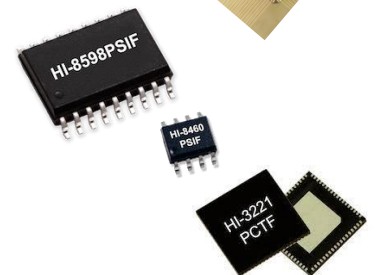
Service Provider	Final Source Inspection or Pre-Cap Inspection	combine with PO

Protec GmbH
High-Rel Electronic Components

FLUX

Chokes	ESA Technology Flow Qualified	
Transformers	ESA Technology Flow Qualified	
Inductors	ESA Technology Flow Qualified	

protec-semi.com

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GSI TECHNOLOGY

SRAM also RadTolerant	SigmaQuad-II+ (x18 / x32 configuration) 350 MHz	288M / 144M / 72M
SRAM also RadTolerant	SyncBurst & NBT (x18 / x32 configuration) 333 MHz	144M / 72M / 36M
APU	High Speed Paralell Computing for SAR, Imaging and AI Applications	
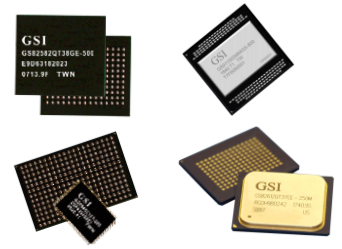
Honeywell

SRAM	QML-Q and V (x8 or x32 configurations)	256k to 64M
MRAM	QML-Q and V (x8 or x16 configuration)	16M / 1M
SER/DES	1-4 Lines or 1-8 Lines	up to 3,125GB/s
RS422	Quad Driver and Reciever	20Mb/s
LVDS	Quad Driver and Reciever	100MHz
Processors	HX1750 & HXRHPPC Microprocessor	
Logic	Quad 2-input NAND	
ADC	12 Bit Monolitic / Low Power	20 MSPS
DAC	12 Bit Monolitic	
Comparator	Common mode 0V to 5V / Input Offset Voltage +/-24mV	
Analog MUX	8-Channel	$R_{ON} < 60\Omega$
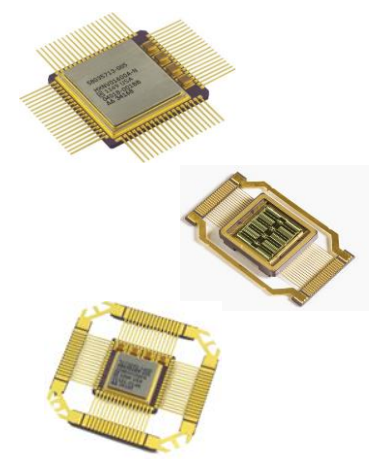
NanoXplore

NG-Medium	SpW & DDR 2 PHY	34KLUT
NG-Ultra	Quadcore ARM R52 @ 600MHz 32 HSSL @ 12.5 Gbps / SpW & DDR 3&4 PHY	500KLUT
NG-Ultra300	16 HSSL @ 12.5 Gbps / SpW & DDR 3&4 PHY Embedded ADCs & DACs	290KLUT

Impulse
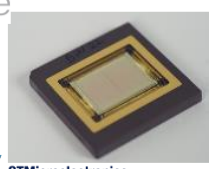
ST STMicroelectronics

dpc
Digital Programmable Controller

DPC G1	16bit openMSP430 – Digital Programmable Controller >60krad / SEL >72.2MeV / SEU >40MeV 16 ADCs / 3DAC / 108 IO / PLL / PWM / Low Power 3x 30MIPS / MIL-1553 / CAN / UART / -55 to 125°C	µController

Protec GmbH
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MACOM®
Partners from RF to Light

|		
RF - Amplifiers	Gain Blocks, Low Noise, RF Power, Linear, Transimpedance	
RF - Attenuators	Digital, Fixed, Voltage Varriable	
RF - Capacitors	Beam Lead, Binary Chip, Bypass, HighQ, MNS, MNOS	
RF - Couplers	Hybrid, Stripline, Broadband	
RF – Diodes	PIN, Step Recovery, Schottky, Varactor Tuning	
RF – Filters	Band Pass, MoCA, Horizontal & Vertical, Low Pass, Diplex, Triplex Filters	
RF - Frequenzy Conversions	Down Converter, Up Converter, Multipliers, Mixer, Recievers, Transcievers	
RF - Frequency Generation	Comb, Voltage Controlled	
RF – Limiters	C-Band to V-Band	
RF – Switches	Drivers, DPDT, Limiter, SPST, SPDT to SP8T	
RF - Magnetics	Inductors, Baluns, Transformers	
Optical – Clock and Data Recovery	VCEL Driver, DML Driver with CDR / TIA / EML	
Optical – Receiver Modules	APD Photorecievers, PIN Photorecievers, HighSpeed Photodetectors and Recievers	
Optical - Laser	Distributed Feedback Lasers, Fabry-Perot Lasers	2,5G, 10G, 25G
Optical – Modulator Drivers	NRZ, PAM, Coherent	Up to 58Gbps
Optical – Post Amplifiers	Limiting Amplifier	
Optical - Photodiodes	APD Photodiode, PAM4 PIN Photodiodes	10G, 25G, 50G, 100G
Optical – Transimpedance	Client Side, Coherent	
Networking - Crosspointswitch	Crosspoint Switches and Signal Conditioners	
Networking - Equalizers	Linear Equalizers 56 / 112 Gbps	2 and 4 Channel
Networking - Processors	Single or Dual-Core Power™ Processor	

TELEDYNE e2V
HIREL ELECTRONICS
Everywhere**you**look™
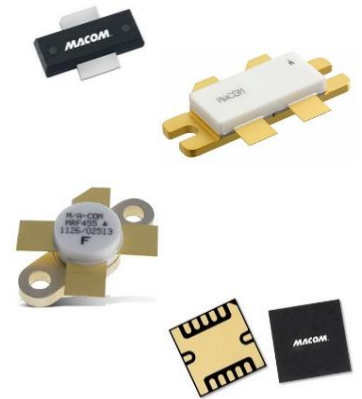
ADC	Base-Band up to Ka-Band	35GHz 12.8GSps
DAC	Base-Band up to Ka-Band	12b 12GSps
DDR4	4GB and 8GB, 100krad >60MeV	Up to ECSS Class 1
Processors	LS1046-Space (ARM A72 @ 1.8GHz) Power PC P2020 and P8548	
SiP Modules	QLS1046 and DDR4 Module	

Q-TECH CORPORATION

| XO	CMOS, TTL, LVDS, LVPECL	Single & Multiple Outputs
TCXO	HCMOS, Sine	±0,5ppm
VCXO	HCMOS, Sine	
OCXO	CMOS, Sine	±10ppb
SAW	Sine 400MHz to 1,3GHz - low phase noise	300krad
MCXO	CMOS or Sine 5 to 80MHz 1pps	50krad
New Space XO	QT780, QT723 and QT735 Series	50krad
Specialty Oscillators	combined OCXO, MCXO, TCXO, SO, VCSO, PLL & crystal filters in modules	

smiths interconnect
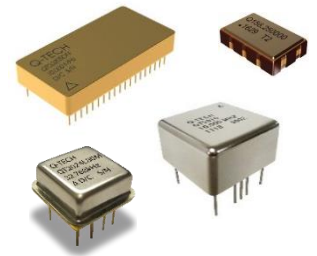
SpaceABLE 28G SL Series	4TRX, 12TX, and 12RX	FM
SpaceABLE 10G SL Series	4TRX, 12TX, and 12RX	FM
SpaceABLE 10G SM Series	4TRX, 12TX, and 12RX	FM
LightABLE 28G LL Series	4TRX, 12TX, and 12RX	EM
LightABLE 10G LL Series	4TRX, 12TX, and 12RX	EM
LightABLE 10G LM Series	4TRX, 12TX, and 12RX	EM

SEMICOA
A DIVISION OF OSI OPTOELECTRONICS

Transistors	2N3810, 2N2920, 2N2857, 2N2369, 2N3637 and more	up to JANSR/F
Diodes	1N5802, 1N5804, 1N5806, 1N5614, 1N5615	JANS & HC / KC die

SKYWORKS

Optocouplers	Many different types available like (OLS049 or OLS249) Screening per MILPRF19500 or MILPRF38534	
RF Diodes	PIN, Schottky, Varactor, Limiter	up to JANS equiv.
SPDT	SPDT and ST4T	up to 5GHz
RF Amplifiers LNA	Small QFM Packages 2x2mm	up to 6GHz
Other RF parts	Combined LNA with switch in one package, Gain Blocks	

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VPT COMPONENTS
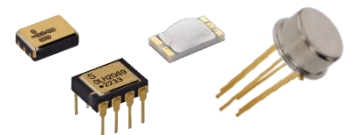
Transistors	NPN and PNP Small Single and Power BJTs	up to JANSR/F
Diodes	Zener, TC Zener, Schottky, Ultra Fast, Rectifier	up to JANS
MosFets	RadHard 100V, 150V, 200V, 250V	up to 84MeV

viking TECHNOLOGY (Non Space only no radiation guarantee)

DRAM Modules	DDR5 (coming soon), DDR4, DDR3, DDR2, DRAM	up to 32GB
STORAGE (Flash/SSD)	2.5 in. SSD, 1.8 in. SSD, M.2 SSD, slimSATA, etc.	
Rugged Memory	ParallelCell MCP, ParallelSSD	
Persistent Memory	DDR4 NVDIMM, Energy SubSystems (ESS)	

Source Surveillance Services, Inc.

Service Provider	Final Source Inspection or Pre-Cap Inspection	To combine with PO

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General Manager

Christian Mayer
General Manager
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Trygve Stafne
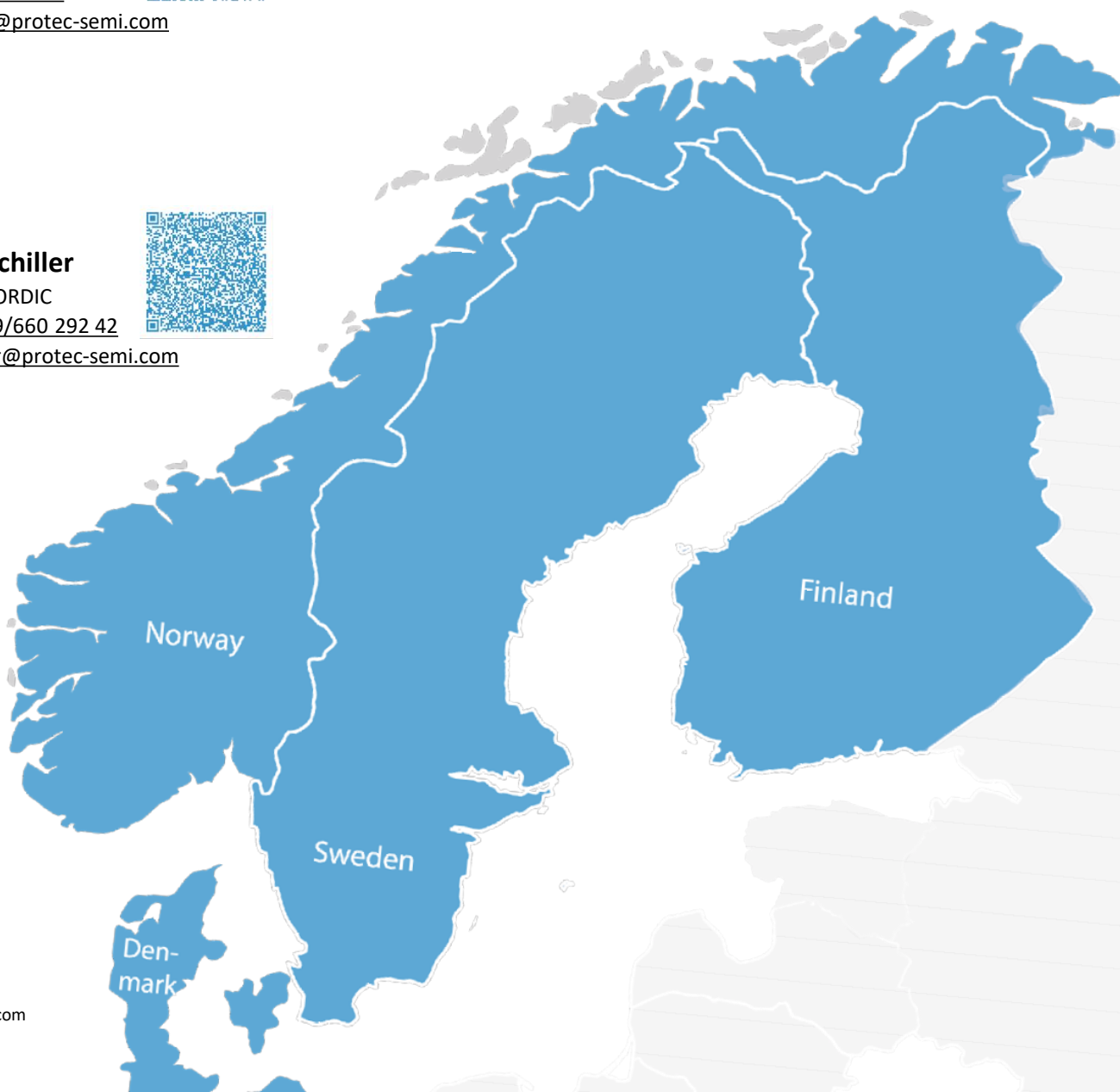Sales Nordic
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Finland

Norway

Sweden

Den-
mark

Protec GmbH
High-Rel Electronic Components

UK & IRELAND LINECARD

available here

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DACH SPACE LINECARD
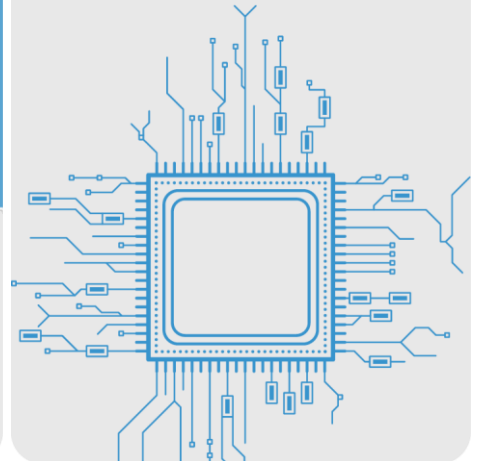
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AVIONIC & INDUSTRIAL LINECARD
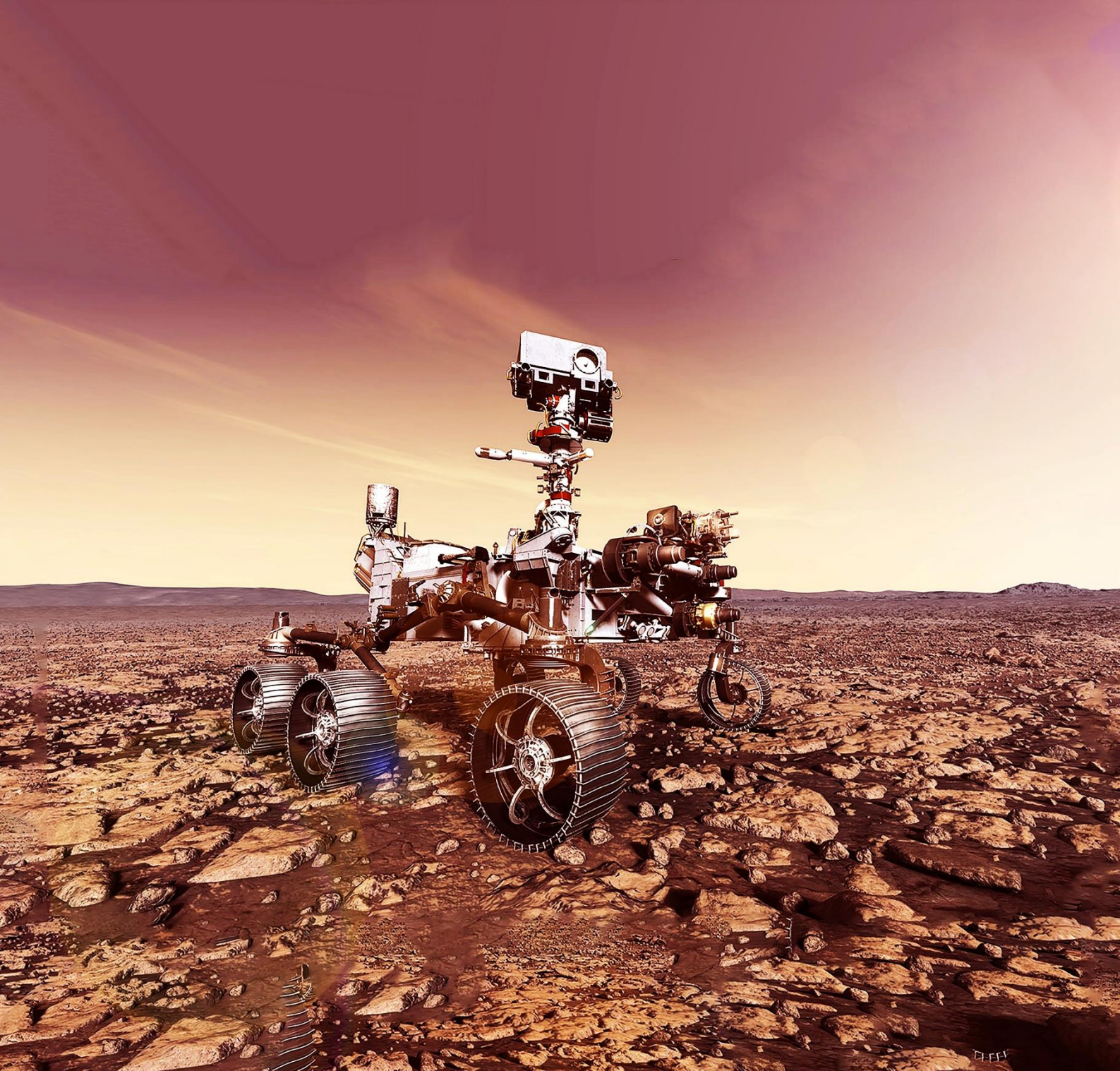
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HISTORICAL BRAND NAMES OF SUPPLIERS
following Brands are still known, either sold or renamed, we might be able to help you

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