saca
europe

PRODUCT CATALOGUE

DEFENCE

AEROSPACE

AVIONICS

RAILWAY

MEDICAL

INDUSTRIAL

www.sacaeurope.com

saca
europe

2020
SACA UK
Liverpool

2019
SACA
Electronics
Ankara

2018
SACA Europe
Eindhoven

2014
IMCA
Mechanics
Ankara

2002
IMCA
Electronics
İstanbul

1988
Industrial and
Commercial
Markets
Experience

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115 BIGHEAD
116 KANEBRIDGE

OMNETICS CONNECTOR CORPORATION

www.omnetics.com

OMNETICS IS A WORLD-CLASS MINIATURE CONNECTOR DESIGN AND MANUFACTURING COMPANY WITH OVER 30 YEARS OF EXPERIENCE, FOCUSED ON MICRO-MINIATURE AND NANO-MINIATURE HIGHLY RELIABLE ELECTRONIC CONNECTORS AND INTERCONNECTION SYSTEMS. OUR MINIATURE CONNECTORS ARE DESIGNED AND ASSEMBLED IN A SINGLE LOCATION AT OUR PLANT IN MINNEAPOLIS, MINNESOTA.

MIL Spec Requirement vs. Omnetics

TEST	MICRO - D MIL-DTL-83513 (1.27 mm pitch)	NANO - D MIL-DTL-32139 (.64 mm pitch)
Content Resistance	26 mΩ	71 mΩ
	9 mΩ	13 mΩ
Shock	50 G	100 G
	500 G	500 G
Durability	500 Mating Cycles	200 Mating Cycles
	2000 Mating Cycles	2000 Mating Cycles
Temperature	-55ºC to +125ºC	-55ºC to +125ºC
	-270ºC up to 260ºC	-270ºC up to 200ºC

Nano-D Connectors/MIL-DTL-32139

SINGLE ROW NANO-D

Horizontal SMT (AA) | Vertical SMT (VV) | Straight Tails (DD) | Thru-Hole Horizontal (H2) | Thru-Hole Vertical (V2) | Pre-Wired (W2) | Jumpers (JU) | MIL-DTL-32139 QPL

LATCHING NANO-D

Surface Mount (AA) | Flex Mount (FF) | Straight Thru-Hole (DD) | Pre-Wired (WD)

DUAL ROW NANO-D

Horizontal SMT (AA) | Vertical SMT (VV) | Straight Tails (DD) | Thru-Hole Horizontal (H4) | Thru-Hole Vertical (V4) | Flex Mount (FF) | Pre Wired (WD) | Jumpers (JU)

PANEL TYPE NANO-D

Horizontal SMT (AA) | Straight Tails (DD) | Flex Mount (FF) | Pre-Wired (WD)

Micro-D Connectors/MIL-DTL-83513

STANDARD MICRO-D

Discrete Wired (WD) | Soldercup (SS) | Power Micro-D | Horizontal Surface Mount (H0) | Vertical Surface Mount (V0)

Card Edge Surface Mount (C0) | Flex Circuit Mount (FF) | Straight Thru-Hole Mount (S2) | Right Angle Thru-Hole (R2) | Jumpers (WXY)

LATCHING MICRO-D

Discrete Wired (WD) | Horizontal Surface Mount (H0) | Vertical Surface Mount (V0) | Card Edge Surface Mount (C0) | Flex Circuit Mount (FF)

Straight Thru-Hole Mount (S2) | Right Angle Thru-Hole Mount (R2) | Soldercup (SS) | Power Micro-D

SINGLE ROW MICRO-D

Soldercup (SS) | Discrete Wired (WD) | Soldercup (SS) | Wired (WD) | Vertical Surface Mount (V0) | Straight Thru-Hole Mount (S2) | Right Angle Thru-Hole Mount (R2)

LOW PROFILE MICRO-D

Discrete Wired (WD)

Right Angle Thru-Hole (H1)

Right Angle Thru-Hole (R2)

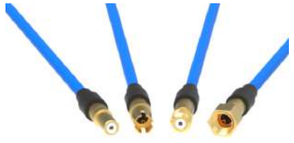
Solder Cup (SS)

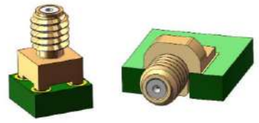
Straight Thru-Hole (S2)

Power and Signal Micro Hybrids: 10A, 5A, 3A

Nano Coax Connectors

Omnetics Nano Coax contacts are available either in a Hybrid Micro-D or as a standalone contact.. The standalone version provides optimal performance in one of the lowest form factors on the market. The Nano Coax contacts are designed to be terminated to a low-loss 29 AWG (.047") 50 coax cable. Cable-Cable: 20GHz / Edge Launch: 20GHz / Thru Hole: 10GHz





Micro 360® Circular Connectors

Omnetics' Micro Circular Connector Series utilizes Omnetics' rugged and reliable Flex-Pin contact system, is spaced on 50 mil (1.27mm) centerlines, features a mated length of less than 12.4 mm, and is specified to MIL-DTL-83513.

Micro Plastic Circulars

Micro Threaded Metal Shell Circulars

Micro Twist Lock Metal Shell Circulars

Micro Break Away Circulars

Micro ACME Triple Thread Ratcheting Circulars

Nano 360® Circular Connectors

Omnetics' Nano Circular Connector Series utilizes Omnetics' rugged and reliable Flex-Pin contact system, is spaced on 25 mil (.64mm) centerlines, has a 9.0 mm mated length, and is specified to MIL-DTL-32139. These ultra miniature circular connectors are ideal for industries that require small and durable performance.

Nano Plastic Circulars

Nano Circular Threaded Metal Shell

Nano Circulars Twist Lock Metal Shell

Nano Break Away Circulars

IP68 Micro Circulars

Full Keyed Breakaway (M)

Full Keyed Breakaway (F)

Ratcheting - RMCP

Ratcheting - RMCS

Cobra: Body-Worn Connector

90° Prewired Micro-D Without Backshell

IP68 Nano Circulars

Full Keyed Breakaway (F)

Full Keyed Breakaway (M)

Nano 360® USB 3.0 (USB 3.1 Gen 1) Connector

Micro Strip Connectors

Single row: pin count changes up to 48
Dual row: pin count changes up to 97 available with latch

Nano Strip Connectors

2-60 positions for single row
2-48 for dual row

Polarized Nano Connector (PZN)

This configuration effectively polarizes the connector without the additional space required for guide pins. Termination options include: Pre-Wiring, Straight tail, Horizontal SMT, and Vertical SMT. Up to 24 positions.

Capabilities

OVERMOLDING	EMI SHIELDING	CUSTOM HARNESSING	CUSTOM METAL SHELL

IEH CORPORATION

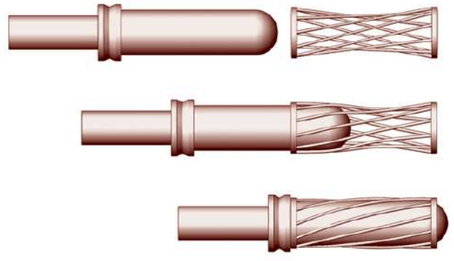
www.iehcorp.com

SINCE 1941, IEH HAS BEEN MANUFACTURING SUPERIOR PRODUCTS FOR DEMANDING APPLICATIONS. WHETHER IT'S PRINTED CIRCUIT BOARD CONNECTORS, SIGNAL OR POWER CONTACTS, OR CUSTOM INTERCONNECTS, FOCUS IS DELIVERING THE RIGHT CONNECTOR SOLUTION.

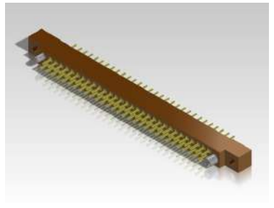
Hyperboloid Technology

Utilized in all of our receptacle connectors, this unique design offers superior capability in every critical parameter of connector performance:

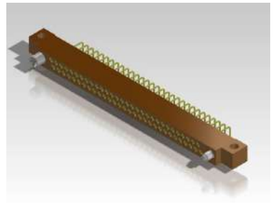
- Very low insertion force
- All but impervious to shock & vibration(Test exceed 300 g's without discontinuity.)
- 100,000 minimum duty cycles
- Extremely low contact resistance
- Improved current carrying capacity (The low contact resistance gives a lower °C rise from ambient under load. This feature often allows the user to operate the same size contact under higher load.)
- High reliability



PCB CONNECTORS

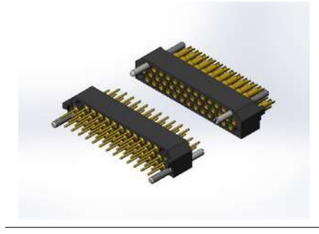


HGM Series - .100" centers
10-208pos
M55302 /55 /64

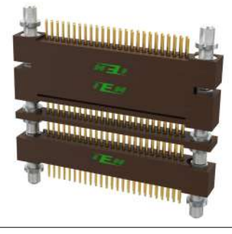


HRM Series - .075" centers
2 & 3 row 10-206pos
M55302 /190 /193

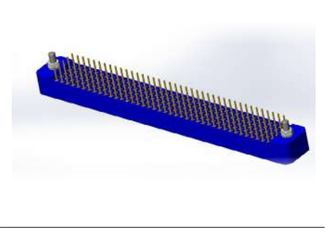
HMM Series - .075" centers
4, 6 & 8 row 58-604pos



HGC/HGS Series
Low-Profile for parallel boards
22-90pos



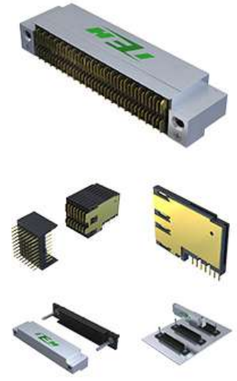
HVM Series - .050" centers
2-row
10-100pos



HMK Series - .100" centers,
2, 3, 4 & 5 row
17-490pos

HYPERKINETIC® CONNECTORS - HIGH SPEED, HIGH DENSITY MODULAR

HKC (cPCI Series)



HKX (VPX-Compatible Series)

- Interchangeable with COTS board layout, but with Hyperboloid Contact System
- 2mm Footprint of cPCI PICMG 2.0
- LCP Insulator Meets Outgassing Requirements
- Press-fit or Solder tail Terminations

- VITA-46 Platform
- Data Rates up to 10 Gbps
- 3U, 6U and Custom Configurations
- Custom Wafer Design for Mixing
- Differential and Single-ended Circuits
- Press-fit or Solder tail Terminations

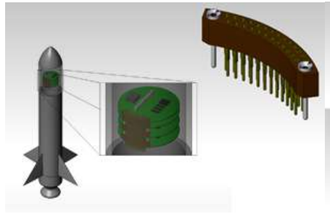
CABLE CONNECTORS / ASSEMBLIES

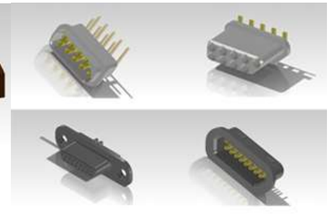
- Flex Cable
- Solder or Crimp Terminations

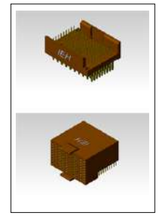
CONTACTS

- Discrete PCB contacts
- Power contacts
- Custom Contacts

CUSTOM PRODUCTS

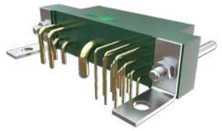






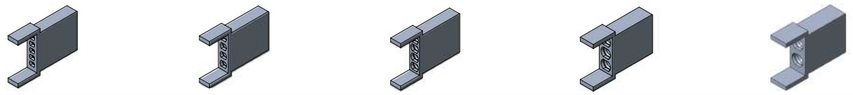
HBH HYBRID POWER/SIGNAL HYPERBOLOID CONNECTORS

This new modular connector series provides the flexibility to mix signal and power contacts within a single housing, to meet the most demanding applications.

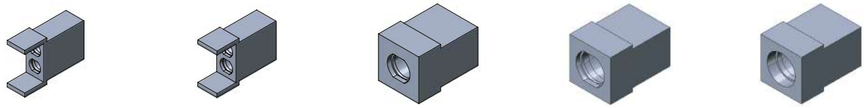


- All socket contacts utilize the Hyperboloid Technology
- Contact sizes from .016” to .169”
- Superior Power Density
- Modular design allows you to choose most any desired connector configuration
- Terminations include straight and right angle PCB mount, crimp, solder-cup, and complaint contacts
- Blind mate option available for increased misalignment

MODULE CHART



A	B	C	D	E
#28 (.016”) 5 CONTACTS MODULE WIDTH: .141”(3.6MM)	#24 (.024”) 4 CONTACTS MODULE WIDTH: .141”(3.6MM)	#22 (.030”) 4 CONTACTS MODULE WIDTH: .185”(4.7MM)	#20 (.040”) 3 CONTACTS MODULE WIDTH: .185”(4.7MM)	#16 (.062”) 2 CONTACTS MODULE WIDTH: .215”(5.5MM)



F	G	H	I	J
#14 (.078”) 2 CONTACTS MODULE WIDTH: .250”(6.4MM)	#12 (.093”) 2 CONTACTS MODULE WIDTH: .275”(7.0MM)	#8 (.142”) MODULE WIDTH: .575”(14.6MM)	.169” MODULE WIDTH: .575”(14.6MM)	RF MODULE WIDTH: .575”(14.6MM)

IEH SPACE-HERITAGE

IEH has been chosen time and again, by engineers who understood that for immunity to shock and vibration, low-insertion force, high-current carrying capacity and resistance to fretting and corrosion, there is no better solution than IEH’s signature Hyperboloid connectors.

From the Apollo Lunar Module to the Orion Spacecraft.

From the Atlas and Vulcan rockets to today’s Commercial Space Launches.

On applications as varied as the Europa Clipper, the 16 Psyche asteroid mission, and today’s most advanced GPS satellites.



Rosenberger ROSENBERGER
www.rosenberger.com

FOR MORE THAN HALF A CENTURY, THE NAME ROSENBERGER HAS BEEN ASSOCIATED WITH THE MOST ADVANCED TECHNOLOGY, QUALITY AND CREATIVITY. ROSENBERGER IS A WORLD-WIDE LEADING MANUFACTURER OF CONNECTOR SOLUTIONS IN THE HIGH-FREQUENCY AND FIBER OPTIC TECHNOLOGY FIELDS.

AeroSpace & Defense

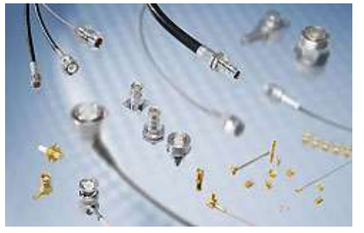
Rosenberger is a qualified manufacturer according to

- DIN EN 9100
- ESCC
- MIL-PRF 39012

Portfolio

- Cable assemblies
- Board-to-board connections
- Board-to-cable connections

RF Coaxial Products

- The Rosenberger product range covers RF connectors, components and accessories and cable assemblies
- Portfolio – Standard Series
- SMP, Longwipe SMP, P-SMP, SMP Infinity, Mini-SMP, FMC, MCX, SMA, QMA, SMB, 1.0-2.3, 1.6-5.6, Inserts (Mini-Coax D-Sub), BNC, TNC, UHF, Mini-UHF, N, QN, SnapN, 7-16, 4.3-10, NEX10™
- Surface mount connectors
- Reverse polarity connectors
- RF test switches
- Adaptors
- In-series adaptors
- Between-series adaptors
- Tools
- Crimping tools, crimp inserts
- Stripping tools

ESCC Space Qualified Products

Nearly all Rosenberger products can be qualified for space application (e.g. acc. to MIL-PRF-39012)

B2B and Board-to-Cable Connections

Rosenberger provides a wide range of RF coaxial connectors for PCB applications.

Features

- Small board-to-board distances
- Equalization of radial and axial misalignments
- Different holding forces
- Fast and cost-effective assembly design

SMP Infinity

Mechanical specification

- Reliable connection, low insertion force (≤ 45N, like SMP limited detent)
- Locking sleeve: retention force up to 400 N
- One piece connector with pre-assembled inner conductor
- Not intermateable with SMP

Electrical specification

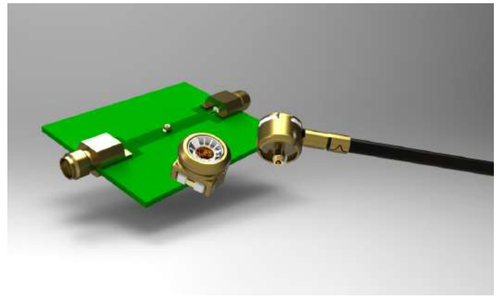
- Return loss ≥ 25 dB DC-30 GHz for cable HFE100D (tbc)
- Insertion loss typical 0,05 x√f(Ghz) (tbc)
- RF leakage (-92dB @ 18 GHz) (tbc)

Planned variants

- Straight and right angle connectors
- Cable connectors for different cables
- PCB connectors (pin in paste, solder pin, SMD, rear mount)
- Bulkhead connectors

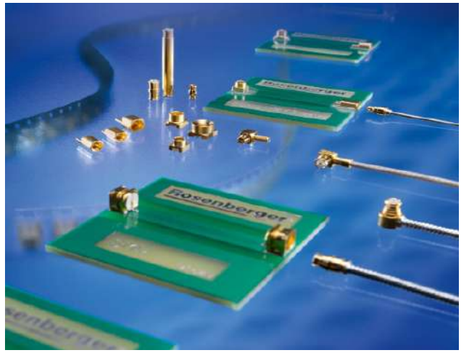
Micro RF

- Height 1,5 mm
- Space on PCB (1,8 x 1,9) mm
- Designed for DC to 6 Ghz
- Impedance 50 Ω
- Height switch + cable connector < 2.7mm
- EMI Shielding: > 40 dB up to 3 GHz
  > 35 dB up to 6 GHz
- Mating cycles > 10000



SMP

Frequency range	:	- 40 GHz
Power handling	:	65W @ 2.2 GHz
Board to Board distance (min)	:	9.05 mm
Axial misalignment	:	+/-0.3mm
Radial misalignment	:	4°
Disengagement forces	:	
Full detent	:	>22N
Limited Detent	:	>9N
Smooth bore	:	>2.2N



Long-Wipe SMP

Frequency range	:	- 6 GHz
Power handling	:	100 W @ 2,2 GHz
Board to Board distance	:	min. 9.35 mm
Axial misalignment	:	+/-0.7mm
Radial misalignment	:	4°

P-SMP High Power

- Frequency range up to 10 GHZ
- Power handling up to 200W @ 2.2GHz
- Board to board distance min. 12.6 mm
- Axial misalignment +/-1mm
- Radial misalignment 4°
- Right angle connectors for cable application

Test & Measurement Portfolio

PCB Connections

- Modular connector systems for DC frequencies up to 50 GHz
- Solderless PCB mount connectors for ultra-high frequency up to 110 GHz
- Spring-loaded coax systems (> 2,500 matings, pairwise phase matching 10 ps standard)

Applications

- High volume industrial production of high end PCB up to 50 GHz
- Applications with different interfaces on one board
- Applications with repair friendly products
- Applications where maintenance is important

Modular Connector Systems

Spring-Loaded Coax

Solderless PCB Connectors

RF-PCB Connectors

Rosenberger Non-Magnetic Products

- MRI (Magnetic Resonance Imaging) equipment
- The aerospace industry
- Industrial applications

Features

- Frequency range DC to 18 GHz
- Current rating typical 2 A
- Data rates up to 10 Gbps
- Tolerance compensation > 0.6 mm
- High number of mating cycles up to > 100,000

SMP Non-Magnetic Connectors

QMA Non-Magnetic Connectors

Multi Channel Mini-Coax

Micro-RF Non-Magnetic Products

Fiber Optic Products

Sensor systems, Data transmission in high-voltage systems, Medical (MRT, Laser), Robots, Shipbuilding, Offshore oil and gas rigs, Broadcast, Mining, Aircraft, Laser systems

Optical MINI Contacts

Expanded Beam Contacts #12

Optical DIN Contacts

Rosenberger Duplex Connector (RDC)

Optical #16 Contacts

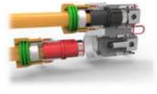
Rosenberger Quad Connector (RQC)

Asistance & Safety System

Surround View, 4K-Camera System

Sustainable Mobility

Hybrid and Electric Drive, Optimized Engine



Connectivity / Infotainment

Control Unit, HD-Display, WiGig, Network Mainframe

Custom Solutions

High Temperature Connectors

Sensor Cables and Connectors

High Mating Cycle Products

Power Supply and Data Connectors

High Speed Data Connectors

SLC - Spring Loaded Contacts

KONNECT RF

www.konnectrf.com

HEADQUARTERED IN FLORIDA, KONNECT RF IS AN INDUSTRY LEADER SPECIALIZING IN RF AND MICROWAVE COMPONENTS, CONNECTORS AND CABLE ASSEMBLIES WITH OVER 30 YEARS OF COMBINED INDUSTRY EXPERIENCE.

Konnect RF can provide lower-cost alternatives for almost any part in the industry. Whether you need domestically manufactured mil-spec equivalents or you can use high-quality internationally produced parts, they can save you money and grow your bottom line.

- Founded 2010
- Located in Southeast Florida
- Over 600 customers Worldwide
- Supplying Coaxial Connectors, Adapters, Cable Assemblies and Passive Components
- Global Network of Contract Manufacturers
- Source based on Customer Requirements
  - Price/Quality
  - Lead Time
- All products inspected, packaged, and warehoused in USA
- Rapid and Cost Effective development of custom products

Connectors

Coaxial cable connectors, PC board receptacles, standard receptacles, field replaceable receptacles, cable terminations.

Adapters

In-Series, Between-Series

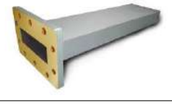
Attenuators

Fixed, variable

Cable Assemblies

RF & Microwave Components

Circulators & isolators, DC blocks, dust caps, power dividers, waveguide products, attenuators



PASTERNACK

www.pasternack.com

SINCE 1972, PASTERNACK HAS STEADILY GROWN BY ALIGNING ITS OFFERINGS TO MATCH THE NEEDS OF OUR CUSTOMERS. WE MAINTAIN AN INVENTORY OF MORE THAN 40,000 PRODUCTS THAT ARE ALWAYS AVAILABLE WHICH GIVES YOU ACCESS TO PRODUCTS RANGING FROM THE RARE, HARD-TO-FIND SPECIALS TO THE BROADEST ARRAY OF INDUSTRY STANDARDS.

The Industry's Largest Selection of In-Stock RF Components

- 99.4% Off-the-Shelf Availability
- Same-Day Shipping Available on more than 40,000 Products
- ISO 9001:2015 Certified
- 24/7 Expert In-house Technical Support

High Isolation Pin Diode Switches

Pasternack's new PIN diode switches feature very high port-to-port isolation of greater than 90 dB at 1-2 GHz, 80 dB at 2-4 GHz and 75 dB at 6-12 GHz. Insertion loss of the high isolation switches from Pasternack varies between 1.0 dB and 2.5 dB depending upon the frequency and switching speed performance ranges from 35 and 75 nanoseconds. These new RF switches are designed with complementary-metal–oxide–semiconductor (CMOS) transistor–transistor logic (TTL) drivers, and are fully matched internally for 50 Ohm input and output, which eliminates the customers need for any additional sensitive RF tuning components.

Multi-Octave Wilkinson Power Dividers

- Covers 0.5 – 2.7 GHz
- 2-way, 3-way, 4-way and 8-way Splitters Available
- 10 to 30 Watts Power Handling
- 1.4:1 Maximum VSWR
- Cover 3G, 4G, WiFi Frequency bands – Well suited for applications such as Distributed Antenna Systems (DAS)

Medium & High Power RF Loads

Our RF load terminations are available in 2.4mm, 2.92mm, 7/16 DIN, BNC, C, Mini SMB, Mini SMP, N, QMA, SMA, SMB, SMC, SMP and TNC connector types. RF load terminations from Pasternack are organized into two categories, feed-thru load and RF load. Pasternack Enterprises RF terminations include precision and standard versions with 0.25 Watts, 0.5 Watts, 1 Watts, 2 Watts, 5 Watts, 10 Watts, 25 Watts, 50 Watts and 100 Watts models

Tunable Band Pass & Band Reject Filters

Pasternack tunable band pass filters and band reject filters (also referred to as band-stop filters or band-rejection filters) are bench top units designed for lab use where they are an integral part of the test lab environment. Six adjustable bandpass filter configurations are available with octave-band tuning from 125 MHz to 3 GHz and a 5% pass band. These variable band pass filters use a tunable 5-section design and have a mechanical direct dial that is accurate within 1%.

60 GHz WR-15 Antennas

WR-15 60 GHz millimeter wave horn antennas are available with a square flange on the connection side. Although our millimeter wave WR-15 antennas operate for 60 GHz applications, they are broadband waveguide gain horns that have a minimum frequency range of 50 GHz to 58 GHz and 63 GHz to 75 GHz maximum. Pasternack millimeter wave 60 GHz antenna products come in 0 dB, 20 dB, 24 dB and 34 dB models

Connectorized RF Amplifiers

Pasternack offers the industry's largest selection of off-the-shelf RF Amplifiers. Selection includes high power amplifiers, high-rel amplifiers, broadband amplifiers, limiting amplifiers, power amplifiers, low noise amplifiers (LNAs), log amplifiers and gain blocks. Frequencies across this amplifier line range from DC to 40 GHz, gain levels ranging from 10 dB to 60 dB, P1dB from 2 mW to 100 Watts, noise figures as low as 0.8 dB and gain variation down to ±0.3 dB.

These amplifiers are employed across the entire spectrum of commercial and military applications including use in radar, electronic warfare, satcom, wireless communications, test lab instrumentation, commercial air traffic control, antenna ranges, telecom infrastructure, sensors and many others.

MIL-DTL-17 High Reliability RF Cable Assembles

Pasternack's military-grade cable assemblies consist of 124 basic configurations from six different cable types for a total of more than 700 part numbers that are all available for same-day shipment. These cables provide operating frequencies of up to 12.4 GHz and VSWR as low as 1.3:1 per connector. They are made from MIL-DTL-17 qualified cable, MIL-PRF-39012 qualified connectors, AS23053 heat shrink and feature J-STD soldering. These commercial off-the-shelf (COTS) cable assemblies are 100% tested and include a test report, as well as material lot traceability.

Waveguides

Waveguides are available in standard flange sizes from WR-430 through WR-15, which encompasses frequencies from 1.7 GHz to 75 GHz. With regards to a waveguide's size, the term "WR-xxx" stands for "Waveguide Rectangular"; the number indicates the inner width dimension of the waveguide in hundredths of an inch. Our entire line of wave guides are constructed with aluminum bodies for its lightweight characteristics. We are a supplier of waveguide adapters, waveguide horns, waveguide sections, waveguide bends, flexible waveguides, waveguide filters and waveguide terminations.

Connectors

Category includes 1.700 part numbers, most of which are RoHS and REACH compliant. Our connectors for RF applications are available in 1.0/2.3, 1.6/5.6, 1.85mm, 10-32, 2.4mm, 2.92mm, 3.5mm, 3/4"-20, 7/16, banana, BNC, BNC twinax, C, D-Sub, F Type, FAKRA, FME, GR874, HN, LC, MC-Card, MCX, MHV, mini SMB, mini SMP, mini UHF, MMCX, N Type, QMA, QN, RCA, SC, SHV, SMA, SMB, SMC, SMP, SSMA, SSMB, TNC, UHF or UMCX connector series. Connectors in this category will terminate to either coaxial cable, terminal or printed circuit board (PCB).

RF Adaptors

Pasternack offers hundreds of in-series and between-series adapter designs including 1.0/2.3, 1.0mm, 1.85mm, 10-32, 2.4mm, 2.92mm, 3.5mm, 3/4"-20 Twinax, 4.1/9.5 Mini DIN, 7/16 DIN, 7mm, BANANA, BNC, BNC Triax, BNC TWINAX, C , D-SUB, F, FME, GR874, HN, LC, MCX, MHV, MINI SMB, MINI SMP, MINI UHF, MMCX, N, PAL, QMA, QN, RCA, SC, SHV, SMA, SMB, SMC, SMP, SSMA, SSMB, TNC, UHF, UMCX and ZMA.

RF Cable Assemblies

- Over 250.000 custom cable assembly configurations available.
- Choose from 1.300 RF coax connectors
- 114 coax cable types including Twinax
- Ultra Flexible Test cables
- Low Loss Expanded Dielectric Flexible Test cables

RF Cable

Our coaxial and twinaxial cable is designed to precise RF industry specifications and is available in 84 coax and 2 twinax versions. Pasternack coaxial cable can be ordered in 50 Ohm, 52 Ohm, 53 Ohm, 75 Ohm, 93 Ohm or 95 Ohm impedances and our twinax cable in 100 Ohm or 78 Ohm impedance designs. Coaxial cables, as well as twinaxial cables, can be purchased with double, single or triple shielding.

Armored Test Cables

Pasternack's armored test cables utilize stainless steel connector construction, with the SMA designed to operate to 20 GHz and the N connector to 18 GHz. These new RF test cables from Pasternack are available with in-series configurations only. A robust mechanical connector/armoring interface and strain relief boot increases the overall durability and life of the test cable. The company's armored test cables are built using PE-P142LL coaxial cable which is triple shielded with an expanded PTFE dielectric, guaranteeing low loss performance.

ODU GROUP
www.odu.de

ODU, FOUNDED IN 1942, IS ONE OF THE LEADING INTERNATIONAL SUPPLIERS OF CONNECTION SYSTEMS. OUR COMPANY EMPLOYS 1,650 PEOPLE AROUND THE WORLD. THE GROUP OF COMPANIES HAS ITS HEADQUARTERS IN MÜHLDORF AM INN, GERMANY. ODU ALSO HAS PRODUCTION SITES IN ROMANIA, USA AND CHINA.

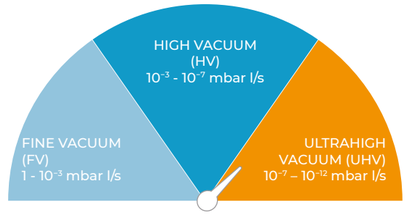
ODU AMC®

	ODU AMC® BREAK-AWAY	ODU AMC® PUSH-PULL	ODU AMC® EASY-CLEAN	ODU AMC® HIGH-DENSITY	ODU THREADED CONNECTOR
Mating cycles	Up To 5,000	Up To 5,000	Up To 5,000	Up To 5,000	Up To 2,000
Locking principle	Break-Away	Push-Pull	Break-Away	Break-Away	Screw Locking
Coding options (mechanical)	Pin/Groove	Pin/Groove	Pin/Groove	Pin/Groove	Pin/Groove
Coding options (optical)	Dot Marking, Color Coding	Dot Marking, Color Coding	Dot Marking, Color Coding	Dot Marking, Color Coding	Color Coding
Max. number of contacts	37	55	19	27	26
Transmission options	Signal, Data, Power	Signal, Data, Power	Signal	Signal, Data	Signal, Data, Power
Available termination technologies	Solder, PCB	Solder, PCB	Solder, PCB	Solder, PCB	Solder, PCB
Max. IP protection in mated condition	IP6K9K	IP6K9K	IP6K8 and IP6K9K	IP6K8	IP6K8

ODU MINI-SNAP®

	ODU MINI-SNAP® PIN AND GROOVE CODING	ODU MINI-SNAP® HALF-SHELL CODING	ODU MINI-SNAP® CODING USING SPLIT INSULATORS
Mating cycles	> 5,000	> 5,000	> 5,000
Locking principle	Push-Pull	Push-Pull	Push-Pull
Coding options (mechanical)	Pin/Groove	Half-Shell	Insulator
Coding options (optical)	Dot Marking	Dot Marking	Dot Marking
Max. number of Contacts	40/30	27	10
Transmission options	Signal, Data, Power	Signal, Data, Power	Signal, Data
Available termination technologies	Solder, Crimp, PCB	Solder, Crimp, PCB	Solder, PCB
Max. IP protection in unmated condition	IP68	IP68	IP68
Max. IP protection in mated condition	IP50/IP68	IP68	IP68

Hermetic Sealing



ODU MINI-SNAP Hermetic Sealing Receptacles

	G80L0Q–PU5RF00–00V0	G80L0Q–PU5QF00–00V0	G81L0Q–PD8RC00–00V0	G81L0Q–PD8QC00–00V0	G82L0Q–P16RC00–00V0	G82L0Q–P16QC00–00V0
⌀ Panel cut-out	9.1 mm + 0.1	9.1 mm + 0.1	12.1 mm + 0.1	12.1 mm + 0.1	15.1 mm + 0.1	15.1 mm + 0.1
Number of contacts	5	5	8	8	16	16
Contact style	Pin	Socket	Pin	Socket	Pin	Socket
He leakage rate acc. to DIN EN 60512-14-2:2006	Tested at < 10^{-9} mbar l/s					
Insulator material	Glass + PEEK					
Data transfer protocol	USB® 2.0[1]		Ethernet (CAT 5)		HDMI® [1]	
Data transfer rate	480 Mbit/s		1 Gbit/s		14.4 Gbit/s	
Single contact nominal current	4 A		3.8 A		4.2 A	
Nominal current insert	3 A		2.4 A		2.1 A	
Nominal voltage acc. to IEC 60664	10 V AC	7.5 V AC	32 V AC		32 V AC	

ODU Circular Plastic Connectors



	ODU MEDI-SNAP® PUSH-PULL	ODU MINI-SNAP® PC	ODU MINI-MED®
Mating Cycles	2,000/5,000	> 5,000	> 1,000
Locking Principle	Push-Pull / Break-Away	Push-Pull	Break-Away
Coding Options (Mechanical)	Pin/groove	Half-shell	Pin/groove
Coding Options (Optical)	Arrow marking, color coding	Arrow marking	Arrow marking
Max. Number Of Contacts	26	27	6
Transmission Options	Signal, power, fluids (liquids and gases)	Signal	Signal
Available Termination Technologies	Solder, crimp, PCB	Solder, crimp, PCB	Solder
Max. IP Protection In Unmated Condition	IP68	IP50	IP50
Max. IP Protection In Mated Condition	IP64/ IP67	IP67	IP67

Electrical Contacts




	ODU SPRINGTAC®	ODU LAMTAC®	ODU TURNTAC®	ODU SPRINGTAC® FLATSOCKET
Primary Attribute	High mating cycles	High temperature & current	Rugged	High mating cycles
Contact Technology	Springwire technology	Lamella technology	Turned, slotted contacts	Springwire technology
Reliability (Contact Points)	44 wire springs (size Ø 6 mm)	19 double contacting lamella louvres (size ⌀ 6mm)	4 contact fingers (size Ø 6 mm)	30 wire springs (size ▫ 6.3 x 0.8 mm)
Nominal Current	100 A (size Ø 6 mm)	115 A (size Ø 6 mm)	100 A (size Ø 6 mm)	27 A (size ▫ 6.3 x 0.8 mm)
Angular Misalignment	+/- 1°	+/- 1°	+/- 5° *	
Mating Cycles	> 100,000	> 10,000	> 10,000	> 50,000
Temperature Range Standard Version	-40 °C to 125 °C	-40 °C to 150 °C	-40 °C to 125 °C	-40 °C to 125 °C
Temperature Range High-Temp. Version		on request		
Contact Size	from Ø 0.76 mm	from Ø 1.5 mm	from Ø 1.5 mm	from ▫ 0.64 x 0.64 mm
Standard Plating	Ag / Au	Ag / Au	Ag / Au	Ag / Au
Crimp Termination	●	●	●	●
Screw Termination	●	●	●	●
For Busbars (Through-Hole Design)	●	●		

*max. 5° misalignment in mounting position with corresponding design of the contact chamber.

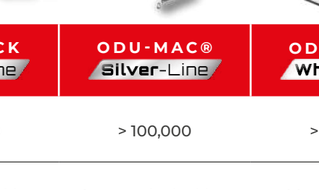
ODU MAC®




	ODU DOCK Silver-Line	ODU-MAC® Silver-Line	ODU-MAC® White-Line	ODU-MAC® Blue-Line
Mating Cycles	> 100,000	> 100,000	> 100,000	> 10,000
Mating Principle	Automatic docking	Automatic docking	Manual mating	Manual mating, automatic docking
Automatic Docking Option		7 frame varieties, individual length		1 frame variety, 4 sizes
Locking			Per spindle / Locking lever / Snap-In (ZERO)	Per spindle / Locking lever / Push-Pull (PUSH-LOCK)
Housing	3 housing varieties avaliable in plastic and metal		Avaliable in plastic and metal	Avaliable in plastic and metal
Strain Relief Housing		●		●
Highest Packing Density On The Market	●	●	●	Highest packing density in the ODU-MAC® range
Non-Magnetic Version			●	
EMV-Protection	In metal housing	On module basis	On module basis	On module basis + PUSH-LOCK housing
Quick-Change Head Option	●	●		●

Applications

Control and display units for soldiers



Robust mobile router and computer

Holder for tactical headsets

Reliable connection in communication system

Next-generation software defined tactical radio

Tactical Radios

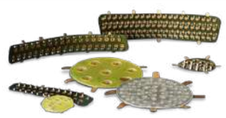
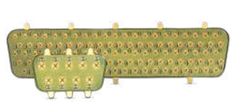
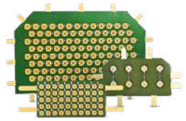
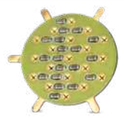
EMI SOLUTIONS INC

www.4emi.com

HEADQUARTERED IN OUR EXPANDED FACILITY IN IRVINE, CALIFORNIA, OUR COMPANY WAS ESTABLISHED IN 1996 BASED ON THE DEVELOPMENT OF OUR FLEXFILTER INSERTS FOR EMI FILTERING. OVER THE YEARS, EMI SOLUTIONS HAS STEADILY GROWN BY DIVERSIFYING OUR PRODUCT OFFERING TO MEET OUR CUSTOMER'S NEEDS.

Flexfilter Inserts

MIL-CIRCULAR	D-SUB	ARINC

Meets requirements for:

DO-160	MIL-STD 461	MIL-STD 810G

- Quick turn
- Cost effective
- High Reliability
- Simple installation - configured to your existing connector
- Suited for High Voltage and Severe Environments
- Select Components (Caps, Resistors, Diodes and more) on a pin by pin basis

Filtered MIL-Circular Connectors


Designs for all Mil-Circular Connectors including:

D38999	M26462	M5015

Pi Filters

- Highest Performance with minimal resonance Insertion Loss of 70 – 80 dB
- Limited number of available capacitances and variations

Planar Arrays or Discoidal Capacitors

- Very good broadband performance
- Insertion loss of 50 – 60 dB
- Can be combined with Inductors (L) for improved performance

Chip Capacitor

- Good for "notch" type filtering
- Reduced higher frequency performance due to chip cap resonance
- Insertion Loss of 40 - 45 dB
- Wide variety of capacitances and variations available

Filtered D-Sub Connectors

Designs for all Mil Spec D-Sub Connectors:

MIL-24308	MIL-83513

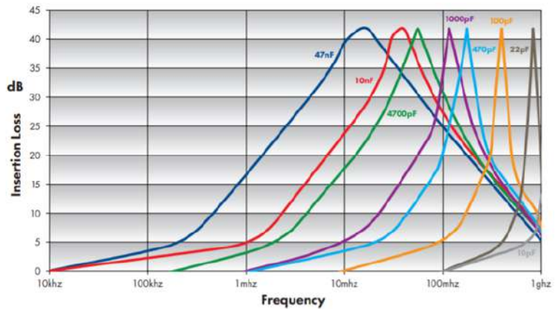
C & Pi Filters

- Highest Filter Performance with Minimal Resonance
- Insertion Loss of 70 - 80 dB
- Limited number of available capacitances and variations

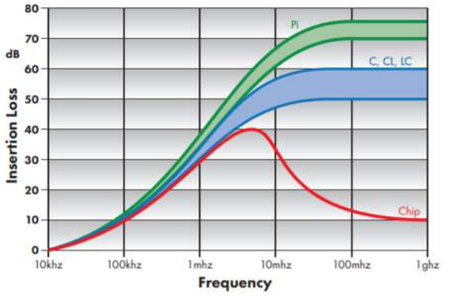
Chip Capacitor

- Good for "notch" type filtering
- Reduced higher frequency performance due to chip cap resonance
- Insertion Loss of 40 - 45 dB
- Wide variety of capacitances and variations available

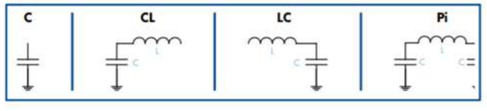
Chip Capacitor Filter Performance



Filtered Connector Performance



	Capacitance Options	Filter Performance
Pi with Planar Arrays	100 pF – 1 uF+	70+ dB
Pi Tubes	47 pF – 12,000 pF	70+ dB
Discoidal Capacitor (C)	470 pF – 40,000 pF+	50 – 60 dB
Planar Array (CL & LC)	100 pF – 1 uF+	50 – 60 dB
Chip Capacitor	3 pF – 47,000 pF+	>40 dB



PI FILTERING	C, C-L OR L-C FILTERING	CHIP CAPACITOR FILTERING
Built with Pi Tubes, Discoidal or Planar Arrays	Built with Chip Caps, Discoidals, Planars or C Tubes	40+ dB Insertion Loss
Provides C-L-C Component Configuration		Quick Turn
Highest Performance: 70+ dB Insertion Loss	45 - 60 dB Insertion Loss	Lowest Cost Option
Very Good High Frequency Performance	Good Broad Spectrum Filter Performance	Limited High Frequency Performance

Termination Options

Feed Thru Filters

- Solder in, Screw in, or Press in versions
- Ideal for RF Applications
- Circuit types: C, CL, LC, Pi
- Typical Capacitance: 1.0pF to 20,000+ pF
- Operating Temp: -55ºC - +125ºC
- Hermetic Seal option
- Various sizes and threads
- High Working Voltage Rating: 50-500V typical
- Custom versions available

INSULATED WIRE INCORPORATED

INSULATED WIRE

www.iw-microwave.com

FOUNDED IN 1970, IW DEVELOPED A UNIQUE PTFE LAMINATION PROCESS AND APPLIED IT TO MANUFACTURING WIRE AND CABLE. THIS PROCESS ALLOWED IW TO MANUFACTURE PRODUCTS OF UNPRECEDENTED RELIABILITY ALONG WITH SMALLER DIAMETERS , FROM .050" TO 0.500".

- Phase matching, amplitude matching, and time delay measurements up to 67 GHz are available when required.
- All assemblies are tested for VSWR and insertion loss before leaving the factory
- High Power cables:
  2801 – up to 1.9KW (c.w) @ 2 GHz
  4806 – up to 3.2KW (c.w) @ 1 GHz
  customer proven to 15KW at 13.56MHz
  7506 – theoretical 5KW (c.w) @ 1 GHz
- 75ohm cables: 2801/75, 1801/75, 1151/75
- Low loss phase stable dielectric: 1571 cable 64dB/100ft. @ 40 GHz – 4dB/100ft. less than Micro Coax

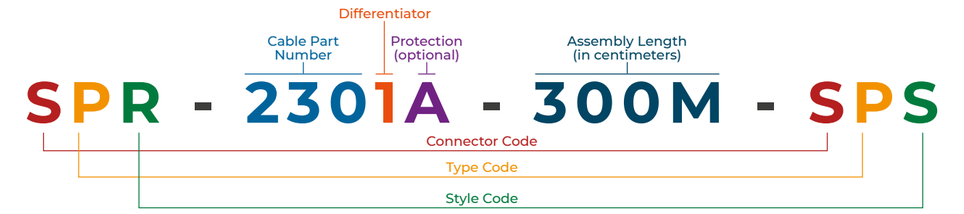
CHOOSE YOUR CONNECTOR

Cable Series	Frequency (GHz)								
	4	11	18	26.5	32	40	50	65	70
115	GPO/GPPO, 1.85mm (V™), 2.4mm, 2.92mm (K™)								
125	GPO/GPPO, 1.85mm (V™)								
140	2.4mm								
150	SMA, TNCA, N, 3.5, 2.4, 2.92mm (K™)								
160	N, SMA, TNCA, SMP, K™								
170	2.92mm (K™)								
180	N, SMA, TNCA, 3.5mm, 2.92mm (K™)								
230	N, SMA, TNCA, SC, 3.5mm								
280	N, SMA, TNCA, SC								
480	N, 7/16, SC&C								
RF047	SMA, 2.92mm (K™), 2.4mm, 1.85mm (V™), GPO/GPPO								
RF085	Industry Standard 085 SR Connectors								
RF141	Industry Standard 141 SR Connectors								
RF250	SMA, TNC, N, SC								

Connector types listed are preferred matching for referenced cables.
Additional connector types can be provided. Please consult factory.

CABLE ASSEMBLIES

METRIC PART NUMBER



Note: Metric part number format is X.XX meters - 300M defines a 3m length assembly; a 10m assembly part number with the same connectors as shown above is SPR-2301A-1000M-SPS

Custom Solutions

In addition to our internally ruggedized cables, IW has a wide range of materials and processes designed to protect the integrity of our cable assemblies. These include a variety of metallic and non-metallic external sheaths to address your specific application. Please contact us for details.

1	**ZEL**	Tefzel Jacket
2	**LC**	Low Smoke/ Zero Halogen Polyurethane
3	**NX**	Fire resistant NOMEX* braid *Nomex is a registered trademark of the DuPont Corporation
4	**A**	Interlocked stainless steel armor, crush resistant up to 400 lbs per linear inch
5	**N**	Neoprene weather proof jacket
6	**ALC**	Armor with extruded Polyurethane jacket

Re-Flex

To provide improved electrical and mechanical performance over traditional hand-formable designs, Insulated Wire presents Re-Flex™.

Both RF085 and RF141 are industry standard line sizes, consequently a wide range of connector types and styles can be used with these cables, including: SMA, TNC, N, GPO™, GPPO™, 2.92mm/K™, 2.4mm and 1.85mm/V™, with performance up to 60GHz. RF250 is commonly used for higher power applications with SMA, TNC, N, SC and HN connectors available.

Cable part numbers are TPRFEP085, TPRFEP141 and TPRFEP250.

CABLE TYPE	MAXIMUM FREQUENCY (CABLE ONLY)	ATTENUATION (DB/FT., MAX)				BEND RADIUS (INCH)	REPLACES
		10 GHZ	18 GHZ	32 GHZ	60 GHZ		
RF085	62 GHz	0.60	0.91	1.28	2.01	0.125	RG405
RF141	32 GHz	0.41	0.60	0.88	-	0.250	RG402
RF250	19.5 GHz	0.29	0.44	-	-	0.375	RG401

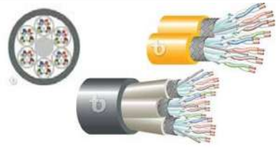
TELDOR

www.teldor.com

TELDOR CABLES & SYSTEMS LTD. MANUFACTURES A WIDE RANGE OF WIRES AND CABLES FOR TELECOMMUNICATIONS, ELECTRONICS, AND ELECTRICITY, AND IS A LEADER IN THE DESIGN AND PRODUCTION OF HIGH DATA-RATE COPPER AND OPTICAL LAN CABLES, INDUSTRIAL BUS, INSTRUMENTATION AND CONTROL CABLES.

The factory was established in 1966 at Kibbutz Ein-Dor, in Israel's Lower Galilee. TELDOR is a leading manufacturer in the development and production of advanced electronic, FiberOptic and data communication cables, as well as outside plant Telecom cables.

Category Cable Data Center Solutions



Cat.5e, Cat.6, Cat.6A, Cat.7, Cat.7A solutions for data centers, patch cords and hybrid cables. Industrial Ethernet Outdoor Data Solutions.

Instrumentation Cable Solutions

Indoor and Outdoor Cables for the Process Industry, Petrochemical Industry, Unshielded and Shielded, Armored and Unarmored for Automation, Bus Cable and Hazardous Areas.

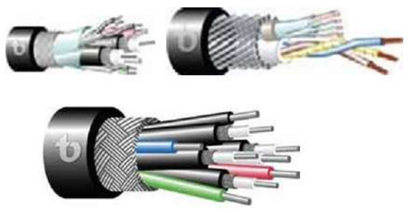
Signal & Control Cable Solutions

Instrumentation, Thermocouple, Bus Cables and Security Cables.

Optical Cable Solutions

Optical Cables for Indoor, Outdoor, Distribution, Breakout, Tactical and Jumper Applications. Rus Approved.

Military & Special Cable Solutions



Tactical Cables, Tailor-Made Cables with Special Armoring and Sheating Materials for Medical, Oil & Gas, Military and Special Applications with Different Conductor Sizes within the Cable; Composite or Hybrid Cable Design.

MARKET SEGMENTS

Defence Line Overview

- Specialty cables (EPD, Custom Design)
- Tactical Fiber Optic cables
- Tactical Data (Category) cables
- Marine & Underwater Cable
- Hybrid and Composite cables
- Wires

Armoring

- Long life cycle & high reliability
- Designed to fit system and operational needs
- Endurance in harsh environmental conditions
- Excellent mechanical properties
  - Galvanized Steel Wires (SWA)
  - Steel Braid Armor (SBA)
  - Corrugated Steel Armor
  - Copper Braid Armor
  - Bronze Wire Armor
  - Dielectric/Glass Armor

Standards & Certifications

We design cables to meet

- **MIL-DTL-24643**
  Low Smoke Zero Halogen Shipboard cable
- **MIL-DTL-24640**
  Lightweight, Low Smoke, Electric Cables for Navy Shipboard Applications
- **MIL-DTL-3432**
  Cables (Power and Special Purpose) and Wire, Electrical (300 and 600 Volts)
- **MIL-49291/3**
  Performance Specification: Fiber, Optical, General Specification
- **MIL-PRF-85045**
  Performance Specification: Cables, Fiber Optics, General Specification including Tactical
- **MIL-C-17**
  Cable, Radio Frequency, Coaxial
- **MIL-STD-810-F**
  Test Method Standard for Environmental Engineering Considerations and Laboratory Tests

Computer & LAN Cables

BANDWIDTH (MHZ)	APPLICATION	CAT.	STANDARTS
100	10/100 BaseT 1 GBaseT(1GbE)	5e	ISO/IEC 11801, IEC 61156-5/6. TIA/EIA 568B/C
250	10/100 BaseT 1 GBaseT(1GbE)	6	ISO/IEC 11801, IEC 61156-5/6. TIA/EIA 568B/C
500	10 GBaseT	6A	ISO/IEC 11801, IEC 61156-5/6, TIA/EIA 568C
600	10 GBaseT ++	7	IEC 61156-5/6
1000	10 GBaseT +++	7A	IEC 61156-5/6
1200	Multiservice	N/A	IEC 61156-7/8
2000	40GB/s	8	ISO/IEC 11801, IEC 61156-9/10, TIA/EIA 568C

MICROPOL

www.micropol.com

MICROPOL MANUFACTURES AND SUPPLIES CABLE SYSTEMS WITH RUGGED, HIGH-QUALITY FIELD CABLES THAT CAN COPE WITH EXTREME TEMPERATURES. LENGTHS RANGE FROM A FEW DECIMETERS TO UP TO SEVERAL KILOMETERS. WE OFFER DIFFERENT TYPES OF EXPANDED BEAM CONNECTORS, BOTH FOR SINGLE-MODE AND MULTIMODE. TAKE FOR EXAMPLE OUR FALCON CONNECTOR WHICH IS USED FOR HARSH MILITARY AND AEROSPACE ENVIRONMENTS. THEY ARE ALL HERMAPHRODITIC, AND ALWAYS CONNECT CORRECTLY WITHOUT ANY ADAPTER NEEDED.

THE SMALLEST AND LOWEST LOSS EXPANDED BEAM CONNECTOR ON THE MARKET – FALCON

- FALCON Mini 1–4 channels, Junior 1-12 channels, Senior 1-16 channels
- Insertion loss < 1.2 dB vs Nato stnadard < 2.5 dB
- Operating temperature -57 to +85°C, +100°C optional.
- Single Mode/Multi Mode
- Hermaphroditic
- IP67
- In accordance with MIL-DTL-83526/20&21

MECHANICAL		
Coupling type	:	Hermaphroditic
Compliant	:	ROHS
Material	:	Hard anodized aluminum
Alternative material	:	Marine bronze & stainless steel
Colour	:	Gray
Durability	:	3000 mating cycles
Free fall	:	500 falls from 1,2 meters height
Vibration	:	5-500Hz, 0,75mm amplitude at 10 g
Shaking	:	390 m/S numbers of shakes 3x4000
Shock pulse length	:	11ms, half sine at 35g Numbers of axis: 3 (x, y, z)

ENVIROMENTAL		
Operating temperature	:	-55°C to +85°C, +100°C optional
Water immersion	:	10 m water depth-mated
Air pressure	:	<25kPa -55°C during 4h
Corrosion resistance	:	500h salt spray
Flammability	:	DOD-STD-1678, method 5010

CABLE REEL

- 1–16 fiber
- Mounted on cable reel
- Split with fanout cable
- Insertion loss < 1,2 dB
- Connector size: mini, junior, senior
- 15 000 000 bendings at 30 mm radius
- Operational temperature range from -40°C to +85°C
- Standard configuration up to 500 meters (can be adjusted according to specifications)

BACKPACK CABLE DRUM

CABLE

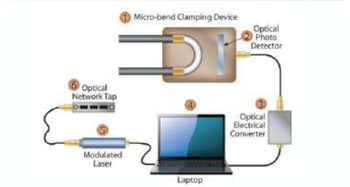
- For heavy duty use
- 1–384 fiber
- Operating temperatur -55°C to +85°C
- Vertical installation
- High flex, up to 15 million bends
- Rodent resistant

MIL-PATCHCORD

- Operating temperature -55 to +85°C
- Connectors with metal outer body
- Cut resistant
- Higher spring load
- Standard and Tailor-made

TEST KITS

CABLE MONITOR



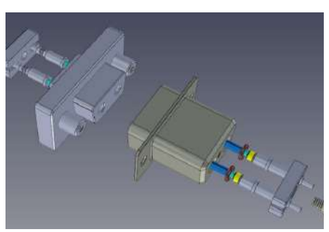
Prevents information tapping,
Detects cable cut off and cable vibrations

- Detects cable cut-off
- Detects specific vibrations of the cable
- Detects specific vibrations of the cable

DISTRIBUTION FRAMES, PIGTAILS, PATCHCORDS

- Insertion loss < 0.2dB
- Return Loss > -55 dB
- 2-384 fiber

CUSTOM SOLUTIONS



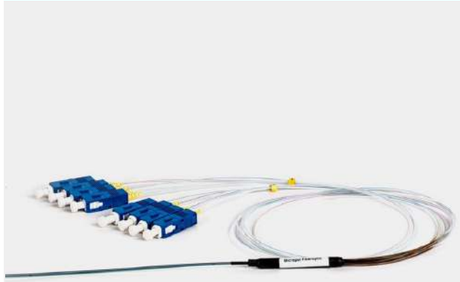
ODF BOXES

- Future proof
- Tailor-made
- Insertion loss < 0.2 dB
- Return loss > -55 dB (UPC)
- Return loss > -65 dB (APC)
- 2–384 fiber
- More fiber available on request

ATTENUATOR

- Metal ion doped fiber
- High-power light source durability
- Wavelength independence
- Attenuation levels ranging from 1 dB to 30 dB
- 1310 nm, 1550 nm, 1250–1625 nm and 1350/1550 nm dual wave lengths

FAN OUT



- Single mode/multi mode
- 2, 4, 8, 12, 16, 24 FIBER
- Standard lengths 1.6 or 2.4 m
- Customized lengths on request
- Rugged fanout
- Insertion loss < 0.2 dB
- Return loss > -55 dB (UPC), > -65 dB (APC)
- Available in S12 color coding

MTP/MTO

- Data center approved
- Insertion loss (reference cable)<0.3 dB/channel
- Return loss > -65 dB (SM)
- High density 4–72 fiber
- MTP-MPO fanout
- MTP-MPO patch
- MTP-MPO jumper cable assembly

SCOTT CABLES

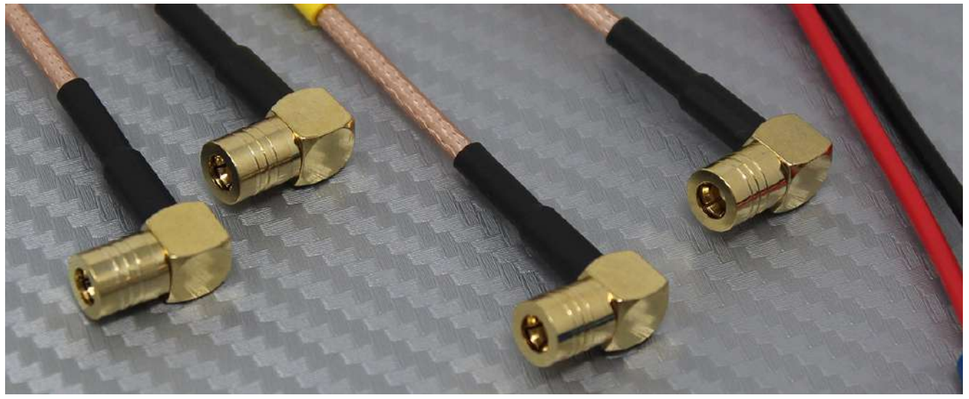
www.scottcables.com

ESTABLISHED IN 1990, AT FIRST SCOTT CABLES WERE KNOWN AS SELECT ENTERPRISES THAN REBRANDED AS SELECT CABLES, AND IN 2012 BECAME SCOTT CABLES. WHATEVER SCOTT CABLES HAS BEEN CALLED, THEY HAVE ALWAYS PROVIDED HIGH-QUALITY PRODUCTS AND EXEMPLARY CUSTOMER SERVICE. AND ALL OF THE MANUFACTURING IS DONE IN THE UK.

From our modern facility in Hampshire, we manufacture and supply custom cable assemblies suitable for some very challenging environments. These are used in a variety of industry sectors, including defence, aerospace, rail, automotive, telecoms and broadcast.

RF Cable Assemblies

At Scott Cables, we have a long history of supplying high-quality RF cable assemblies, either phased matched or delayed depending on your requirements. All our RF cable assemblies are fully performance-tested to make sure they match your needs.



Our customers come to us for applications in:

- Military, aerospace and rail communication systems
- Wireless networks in the telecommunication industry
- Commercial uses for sound and vision broadcast

RF Cable Assembly Types

We can supply you with high-performance flexible and semi-rigid RF cable assemblies, including microwave cable assemblies up to 40GHz. Due to our automated coaxial cable preparation equipment, you will benefit from reduced build times and high volume production runs. This helps to keep your costs down too.

Wiring Harnesses – UK Manufacturer

Scott Cables is a UK manufacturer of bespoke wiring harnesses (or wiring looms as they are also known) for a vast range of power, data and signal applications. We have a highly skilled and experienced team and have been supplying wiring harness products to our customers for thirty years. Our products support a wide variety of market sectors including critical applications in defence, aerospace and rail.

Wiring Harness Types

Our customers come to us for:

- Open looms, assembled using tape, cable ties or lacing cord.
- Fully sealed systems, using heat shrink tubes, moulded parts and conduit.
- Electrically shielded harnesses, using braid or foil screening to eliminate interference in critical applications.
- Multicore cables, where consistency of your product is guaranteed, with the precise number, colour and specification of inner wires to suit your application.

We manufacture wiring harnesses using all types of connector systems, in both crimp and solder termination styles, including:

- Military Circular
- Industrial
- D-Type/D-Sub
- IDC

Electro-Mechanical Assemblies

Scott Cables can provide you with complete, ready-to-install electro-mechanical assembly units comprising of a combination of electrical wiring with a PCB or a range of electrical devices, including switches, relays and bulbs. Ordering a block of components as a single-part number assembly from us helps keep your project running more efficiently, by reducing your purchasing administration burden and assisting your supplier rationalisation initiative.

Electro-Mechanical Assembly Types

Our electro-mechanical assemblies include:

- Control panels and boxes
- Distribution boxes
- Rack and panel assemblies
- Cabinet wiring

The assemblies are often supplied housed in either metal or plastic enclosures, and we can provide these housings and any bracketry custom-made to your own requirements. Any metalwork can be machined, painted or plated to your specifications.

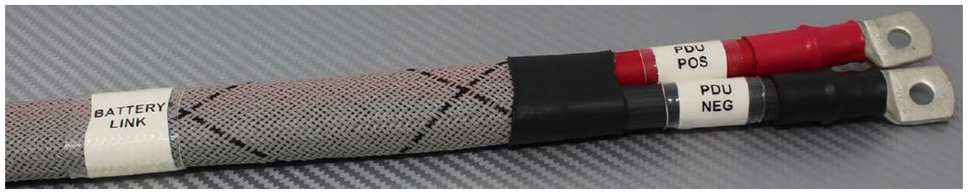
In addition, our well-equipped on-site tool room allows for rapid modification of standard off-the-shelf housings.

Power Leads and Battery Cables

With 30 years in the business, Scott Cables understand the importance of good quality power leads and battery cables to ensure your electrical circuits work efficiently. We have cut, strip and termination equipment suitable for high-power assemblies built with large cross-sectional area cables. The automated processing equipment means that we can supply you with high volume runs with reduced build times at a low cost to you.

Our UK-based business produces quality, performance-tested battery cables and power distribution systems for:

- Electric and hybrid vehicle drivetrains
- Industrial and military generators
- Electrical power transmission lines in rail and energy applications.



Power Lead and Battery Cable Types

We offer a wide range of bespoke insulated power cable assemblies for both low voltage and high voltage applications, as well as braided earth straps that can be built to your own specification.

POLYFET

www.polyfet.com

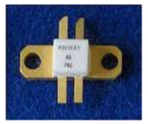
POLYFET RF DEVICES IS A MANUFACTURER OF BROAD BAND RF POWER TRANSISTORS AND POWER MODULES. THEY ARE A PRIVATE CORPORATION THAT HAS BEEN IN BUSINESS SINCE 1988. THE DEVICES CONSIST OF GALLIUM NITRIDE, LDMOS, AND VDMOS TECHNOLOGIES PROCESSED USING STATE OF THE ART EQUIPMENT.

LATERAL DMOS TRANSISTOR

- 7.5. 12.5, 28 and 50 Volts
- DC to 1.5 GHz
- 6 watts to 600 watts
- High Gain

VERTICAL DMOS TRANSISTOR

- 12.5, 28 and 50 Volts
- DC to 1.5GHz
- 4 watts to 400 watts

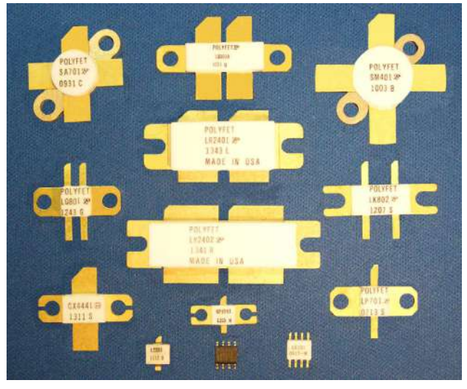


GALLIUM NITRIDE TRANSISTOR

- 28 and 48 Volts
- DC to 2..5GHz
- 10 watts to 85 watts
- High Efficiency and Gain

WHAT DOES POLYFET OFFERS TO THE MARKET?

- GaN transistors
- LDMOS transistors
- VDMOS transistors
- Broadband modules
- Linear and non-linear models for simulation
- 2 - 4wk lead times
- Application notes
- Custom ampplifier and module design service
- Technical support
- Long-Term (20+ years) production support



LDMOS	FLANGED MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	gm mho	Idsat A	Ciss pf	Crss pf	Coss pf	Style
LP701	35	500	12	1,8	1,6	10	60	1,6	30	Single Ended
LC401	60	500	12	1,3	2,7	17	80	4	50	Single Ended
LP702	70	500	12	1	3,2	20	120	3,2	60	Single Ended
LK701	70	500	14	1	1,6	10	60	1,6	30	Push - Pull
LK702	90	500	13	0,6	3,2	20	120	3,2	60	Push - Pull
LX501A	100	500	12	0,75	4,8	30	150	7,5	100	Single Ended
LZ402	125	500	12	0,75	5,4	34	160	8	100	Single Ended
LB2301	125	500	18	0,48	5	15	70	1,4	25	Push - Pull
LR2301	125	500	18	0,48	5	15	70	1,4	25	Push - Pull
LB401	130	500	14	0,75	2,7	17	80	4	50	Push - Pull
LR401	130	500	14	0,75	2,7	17	80	4	50	Push - Pull
LR501A	175	500	13	0,44	4,8	30	150	7,5	100	Push - Pull
LB501A	175	500	13	0,44	4,8	30	150	7,5	100	Push - Pull
LA2541	200	500	16	0,38	7,5	21	122	2	45	Push - Pull
LS2541	200	500	16	0,38	7,5	21	122	2	45	Push - Pull
LR2401	175	500	16	0,48	7	24	110	1,8	40	Push - Pull
LR2501	200	500	16	0,4	7,5	27	122	2,6	45	Push - Pull
LR2541	200	500	16	0,4	7,5	21	122	2	45	Push - Pull
LS2641	250	500	16	0,35	7,8	29	147	1,6	60	Push - Pull
LP801	15	1000	12	3,4	0,8	5,5	30	1	15	Single Ended
LQ2001	20	1000	19	1,5	1	2,8	17	0,3	6	Push - Pull
LQ801	30	1000	12	1,8	0,8	5,5	30	1	15	Push - Pull
LK802	45	1000	12	1,1	1,6	11	60	2	30	Push - Pull
LK2201	50	1000	17	1,2	2,8	7,5	40	0,8	15,2	Push - Pull
LX401	60	1000	10	1,3	2,7	17	80	4	50	Single Ended
LX2401	80	1000	15	0,75	7	24	110	1,8	40	Single Ended
LB2401	125	1000	16	0,48	7	24	110	1,8	40	Push - Pull
LP601	7	1500	10	3,6	0,5	4	16	0,8	13	Single Ended

GALLIUM NITRIDE TRANSISTORS										
GaN	FLANGED MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	eff %	Idsat A	Ciss pf	Crss pf	Coss pf	Style
GP1001	10	2500	11	5,45	50	2,4	3	0,17	1,6	Single Ended
G21001	10	2500	11	5,45	50	2,4	3	0,17	1,6	Single Ended
GP2001	20	2000	11	4,2	65	7,2	7,2	0,56	4	Single Ended
G22001	20	2000	11	4,2	65	7,2	7,2	0,56	4	Single Ended
GX2001	20	2000	11	3,5	65	7,2	7,4	0,56	4,5	Single Ended
GX4001	35	2000	11	2,4	60	14,5	13	1,1	7,5	Single Ended
GX4002	70	2000	11	0,9	55	26	26	2,2	15	Single Ended
GaN	FLANGED MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	eff %	Idsat A	Ciss pf	Crss pf	Coss pf	Style
GP1441	10	2500	11	5,45	35	2,2	3	0,15	1,5	Single Ended
G21441	10	2500	11	5,45	35	2,2	3	0,15	1,5	Single Ended
GP2441	40	2500	11	4,2	55	6,8	7,2	0,37	3,5	Single Ended
GP3441	50	2500	11	3,6	55	8,5	10	0,45	6	Single Ended
GX2441	50	2000	11	3,5	55	6,8	7,5	0,37	4	Single Ended
GX3441	80	2000	12	3	60	8,5	10	0,45	6	Single Ended
GX4441	100	2000	12	2,4	60	13,5	13	0,8	7	Single Ended
GX3442	120	2000	11	1,8	55	17	20	0,9	12	Single Ended
GX4442	160	2000	12	0,9	55	24	26	1,6	14	Single Ended

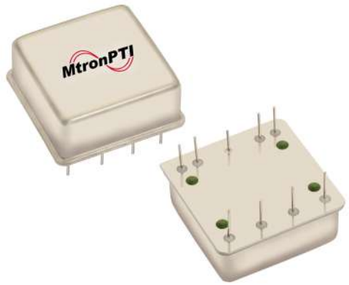
LDMOS	SURFACE MOUNT									28 VOLT
Part No	Pout W	Freq Mhz	Gain dB	theta jc	gm mho	Idsat A	Ciss pf	Crss pf	Coss pf	Style
L8701PR	30	500	13	2,5	1,6	10	60	1,6	30	Single Ended
L2701	30	500	13	1,8	1,6	10	60	1,6	30	Single Ended
L2601	7	1500	10	3,6	0,5	4	16	0,8	13	Single Ended
L8801PR	13	1000	10	5	0,8	5,5	30	1	15	Single Ended
L2801	15	1000	12	3,4	0,8	5,5	30	1	15	Single Ended

MTRONPTI
www.mtronpti.com

MTRONPTI OFFERS A WIDE RANGE OF PRECISION FREQUENCY CONTROL AND SPECTRUM CONTROL SOLUTIONS INCLUDING: RF, MICROWAVE AND MILLIMETER WAVE FILTERS, CAVITY FILTERS - CRYSTAL, CERAMIC, LUMPED ELEMENT AND SWITCHED FILTERS, HIGH PERFORMANCE AND HIGH FREQUENCY OCXOS, INTEGRATED PLL OCXOS, TCXOS, VCXOS, LOW JITTER AND HARSH ENVIRONMENT OSCILLATORS AND CRYSTALS.

ELECTRONIC WARFARE AND RADAR

PRODUCT LINES	CAPABILITIES
Crystal Filters to 200 MHz	In House High Precision Crystal
LC Filters to 6 GHz	Ultra low phase and low G-Sensitivity in a small package
Cavity / Waveguide Filters to 30 GHz	E-Vibe Oscillator capability
N-plexers, Switched Filter Banks, Phase and Amplitude Matched Filters	High Power Handling
Precision Resonators to 200 MHz	Phase and amplitude filter matching
Low Phase Noise and Low G-sensitivity OCXOs up to 6.0 GHz	High channel to channel isolation

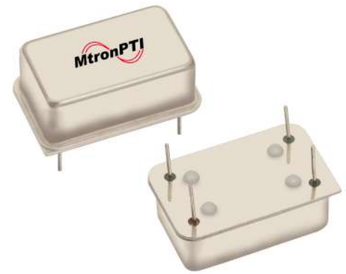


SATELLITE COMMUNICATIONS

PRODUCT LINES	CAPABILITIES
Tight stability, Low Phase Noise and Low G-sensitivity OCXOs up to 6 GHz	Ultra-Lightweight and Compact Solutions
PLL integrated Oscillators	High Power Handling RF Filters
LC Filters to 6 GHz	Corona Discharge Analysis / Testing
Cavity / Waveguide Filters to 30 GHz	High Channel to Channel Isolation
N-plexers, Switched Filter Banks	Very Low Insertion Loss
Low G Sensitivity TCXO	Ultra-low phase and tight stability in a small package
Low Phase noise VCXO	E-Vibe compensation oscillator capability, low g-sensitivity
Integrated Microwave Assemblies including RF filters, LNA and Switching	

COMMUNICATIONS & NAVIGATION

PRODUCT LINES	CAPABILITIES
Crystal Filters to 200 MHz	In House Crystal Resonator Processing
LC Filters to 6 GHz	Ultra-Lightweight and Compact Solutions
Cavity / Waveguide Filters to 30 GHz	Wash proof surface mount LC filters
N-plexers, Switched Filter Banks	Low Intermodulation Performance
Low phase noise and small package OCXOs	Very Low Insertion Loss
VCXOs and TCXOs to 1.4GHz	Low phase noise, tight stability and low aging TCXOs



SPACE PRODUCTS

PRODUCT LINES	CAPABILITIES
Crystal Filters to 200 MHz	In House Crystal Resonator Processing
LC Filters to 6 GHz	Ultra Lightweight and Compact Solutions
Cavity / Waveguide Filters to 20 GHz	Corona Discharge Analysis / Testing
N-plexers	High Power Handling
Precision Resonators to 200 MHz	High Channel to Channel Isolation
	Very Low Insertion Loss

Solid State Power Amplifiers

MtronPTI's Solid State Power Amplifier product line is available immediately in small modules or rack-mountable units serving frequency ranges from 300 MHz to 40 GHz. All amplifiers are fully protected against load VSWR, input overdrive, over/under supply voltage and output overcurrent. Standard and custom models are available and custom integrated filter/amplifier/coupler systems can be designed to fit your RF system needs.

A1 MICROWAVE

www.a1microwave.com

A1 MICROWAVE WAS FOUNDED IN 2001 IN UNITED KINGDOM, AND IS A LEADING DESIGNER AND MANUFACTURER OF PASSIVE RF AND MICROWAVE COMPONENTS AND SUB-ASSEMBLIES FOR SATCOMS, TELECOMS, DEFENCE, RADAR AND SCIENTIFIC APPLICATIONS.

Products and services are free from ITAR restrictions and many of our commercial off the shelf products (COTs) can be tailored to meet precise customer requirements.

Standard and custom-designed products are offered in the frequency range 100 MHz to 50 GHz and popular filters for satcoms are available from stock for quick delivery.

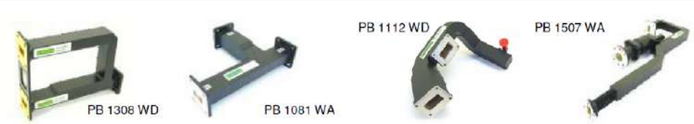
The company acquired JMD Technologies in 2010 which had an established credibility in Precision Waveguide Component and Sub-Assembly production WG 6 (WR 650) to WG 22 (WR 28), and has been manufacturing since 1990. A1 Microwave also provides build to print of precision waveguide components and sub-assemblies from WG6 (WR650) to WG22 (WR28). A1 Microwave can supply specialist items to the Defence, Aerospace, Marine, Satellite Communications, Commercial and High Power segments of the markets.

TRANSMIT ARMS

RECEIVE FILTERS

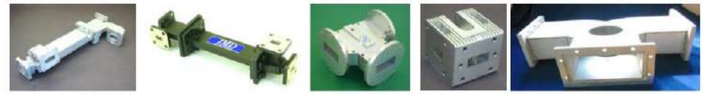
TRANSMIT FILTERS

DIPLEXERS



ANTENNA FEEDS

CIRCULATOR HOUSINGS



TERMINATION HOUSINGS

BENDS AND TWISTS

MAGIC TEES AND OMT'S

COMBINERS

GENERAL COMPONENTS

Since 2001 A1 Microwave's Filter division has brought high quality technically advanced microwave filtering products to the Satcom, Radar and Fixed Link communications markets.

Fast delivery and No NRE (on standard designs) is achieved by using sophisticated in-house design and simulation software, all new designs are "right first time" allowing the design to move from the design computer to the machine shop without the need for prototyping.

With in house CNC machining, turning, brazing, hard and soft soldering and bending facilities A1 Microwave can design or build to print a complete range of custom waveguide components and assemblies.

TRON
www.tron.com.tr

ESTABLISHED IN 1990, TRON OFFERS 30-YEARS EXPERIENCE OF RF SIGNAL ENGINEERING. TRON'S PRODUCT PORTFOLIO COVERS RF SIGNAL ROUTING EQUIPMENTS FOR RADIO MONITORING AND SIGINT/COMINT SYS-TEMS, RF AMPLIFIER MODULES AND RF/OPTICAL/HYBRID BROADBAND TELECOMMUNICATIONS NETWORK EQUIPMENT.

Beside on-the-shelf products, Tron provides tailor-made solutions for specific needs. Combining experience from telecommunications networks' tough and competitive working conditions with defense markets' high standards, Tron's design team has a unique advantage to cope with chal-lenges.



	HF MULTICOUPLERS	VHF MULTICOUPLERS	UHF MULTICOUPLERS
Product Name	TRFMC-30-16-2-A	RFAB-30-512	TRDB-L-1-8
Frequency Range	1-30 MHz	30-512 MHz	950-1450 MHz
Input Ports	2	1	1
Output Ports	16	10	8
Matrix Topology	non-blocking	non-blocking	non-blocking
Internal Amplifier(s)	switchable	switchable	switchable
Gain (active mode)	typ. -20 dB	2 to 12 dB	max 30 dB
Gain (by-pass mode)	typ. -20 dB	-9 to -12 dB	typ 1 dB
OIP3	min 22 dBm	min 18 dBm	20 dBm
OIP2	min 45 dBm	min 30 dBm	
Noise Figure	max 5 dB	typ 2 dB	max 5 dB
VSWR (I/O)	typ. 1.5:1 / 1.5:1	typ. 2.0:1 / 2.0:1	
Isolation (Out-Out / In-In)	min 40 dB	min 20 dB	min 40 dB
Maximum Input Signal	+30 dBm CW	+30 dBm CW	+39 dBm CW
Powering	28 VDC	28 VDC	28 VDC
Powering & Control Interfaces	D38999	D38999	D38999
RF Interfaces	TNC type	N type	SMA female type
Remote Access	Ethernet, TCP/IP	Ethernet, TCP/IP	Ethernet, TCP/IP
Power Consumption	max 30 W	max 40 W	12 W
Housing	19'' Rack 2U, rugged	19'' Rack 2U, rugged	19'' Rack 1U, rugged



MULTIBAND MULTICOUPLERS				
Product Name	TRFMC-3000-4-2	TRFMC-3000-16-2	TRFMC-6000-16-3	TRFMC-6000-12-8
Frequency Range	20-3000 MHz	20-3000 MHz	20-6000 MHz	20-6000 MHz
Input Ports	2	2	3	8 (2 per sub-band)
Output Ports	4	16	16	12
Matrix Topology	non-blocking	non-blocking	non-blocking	non-blocking
Internal Amplifier(s)	Switchable	Switchable	Switchable	Switchable
Gain (active mode)	typ. +15 dB	typ. -2 dB	typ. +10 dB	typ. +10 dB
Gain (by-pass mode)	typ. -13 dB	typ. -26 dB	typ. -30 dB	typ. 0 dB
OIP3	min 15 dBm	min 35 dBm	min 18 dBm (<0.5 GHz) min 10 dBm (>0.5 GHz)	min 25 dBm
OIP2	min 35 dBm	min 40 dBm	min 30 dBm (<0.5 GHz) min 18 dBm (>0.5 GHz)	min 50 dBm
Noise Figure	max 5 dB	max 10 dB	max 6 dB	max 8 dB (<500MHz) max 11 dB (<2GHz) max 12dB (<6GHz)
VSWR (I/O)	typ. 2.0:1 / 2.0:1	typ. 2.0:1 / 2.0:1	typ. 2.0:1 / 2.0:1	typ. 2.0:1 / 2.0:1
Isolation (Out-Out / In-In)	min 15 dB / min 45 dB	min 15 dB / min 45 dB	min 40 dB	
Maximum Input Signal	+13 dBm CW	+13 dBm CW	+30 dBm CW	+39 dBm CW
Powering	28 VDC or 220 VAC	28 VDC or 220 VAC	28 VDC	28 VDC
Powering & Control Interfaces	D38999	D38999	D38999	D38999
RF Interfaces	N type / SMA type	N type / SMA type	TNC type	TNC type
Remote Access	Ethernet, TCP/IP	Ethernet, TCP/IP	Ethernet, TCP/IP	Ethernet, TCP/IP
Power Consumption	max 20 W	max 20 W	max 30 W	max 40 W
Housing	19'' Rack 1U, rugged	19'' Rack 2U, rugged	19'' Rack 2U, rugged	19'' Rack 3U, rugged



HF SWITCH MATRIX	MULTIBAND SIGNAL ROUTER	MOBILE RF SWITCHES FOR LAND/SEA/AIR VEHICLES
1-30 MHZ 16 INPUT, 8 OUTPUT	1-6000 MHZ 28 INPUT, 8 OUTPUT	20-3000 MHZ 16 INPUT, 6 OUTPUT

RFCI

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IN TODAY'S COMPETITIVE ENVIRONMENT, DESIGNERS ARE FACING THE TOUGH CHALLENGE OF DEVELOPING SYSTEMS THAT REQUIRE HIGH PERFORMANCE, SHORTER LEAD TIMES-TO-MARKET, AND TREMENDOUS COST REDUCTIONS. AT RFCI, WE DESIGN & MANUFACTURE THE MOST CHALLENGING FERRITE DEVICES TO PROVIDE HIGH PERFORMANCE, HIGH RELIABILITY, AND INNOVATIVE SOLUTIONS TO OUR CUSTOMERS.

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DROP-IN CIRCULATORS / ISOLATORS

Single Drop-in Circulator, Communication Bands from 300MHz to 18 GHz

Single Drop-in Isolator (5W to 200W Power Handling) from 300MHz to 10 GHz

Dual Drop-in Isolator (5W to 150W Power Handling) from 300MHz to 10 GHz

Drop-in Iso-Attenuator (100W with 20dB, 30dB) from 700MHz to 4 GHz

Broadband, Octave Band Circulator/ Isolator from 500MHz to 20 GHz

COAXIAL CIRCULATORS /ISOLATORS

Type N Circulator from 300MHz to 10 GHz

Type N Dual Circulator from 300MHz to 10 GHz

Type N Single and Dual Isolator (10W to 250W Power Handling) from 300MHz to 10 GHz

SMA Circulator from 300MHz to 20 GHz

SMA Single and Dual Isolator (10W to 200W Power Handling) from 300MHz to 20 GHz

SMD CIRCULATORS/ ISOLATORS

SMD Circulator from 700MHz to 3800 MHz

SMD Isolator (10 W to 100W Power Handling) from 700MHz to 3800 MHz

LUMP ELEMENTS LOW FREQUENCY

Coaxial Type N, SMA Circulator/Isolator (50W to 100W Power Handling) from 49MHz to 174 MHz

Drop-in Circulator/ Isolator (50W to 100W Power Handling) from 49MHz to 174 MHz

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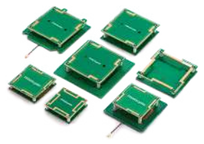
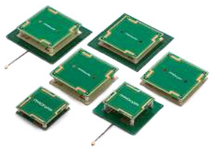
MAC TECHNOLOGIES IS A COMPANY THAT DEVELOPS AND PRODUCES VARIED SELECTIONS OF WIRELESS COMMUNICATION COMPONENTS ESSENTIAL IN THIS EVER CHANGING HIGH TECH ERA, BASED ON THEIR SOURCE TECHNOLOGY, SINCE 2005.

RFID ANTENNA

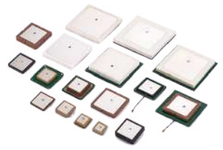
Rfid Antenna



Quadrifilar Meander Antenna



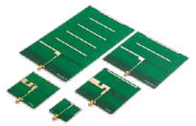
Quadrifilar Wide-band Antenna



Ceramic Antenna

Near Field Antenna

Fixed Type Antenna



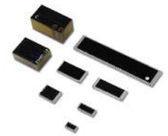
YAGI Antenna

ANTENNA

GPS Antenna

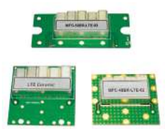
GPS Active Antenna

DMB/DAB Antenna



Chip Antenna

FILTER



LTE Filter

Ceramic Filter

Dielectric Duplexer

Multiplexer

DIELECTRIC RESONATOR

Dielectric Resonator

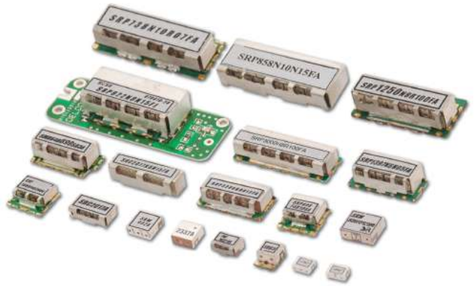
TE MODE DR

TEM MODE DR

Ceramic Filter

Features

- Low insertion loss for using high Q-value dielectric resonators
- Small and light for using high dielectric constant ceramics
- Excellent temperature stability for temperature
- Excellent mechanical stability without vibratile structure
- SMD and reflow soldering available
- Mountable by automatic placement machine



Multiplexer

Features

- Various size & wide frequency
- Temperture compensated
- Low insertion loss
- Low cost & custom design
- High mechanical stability

Dielectric Duplexer

Features

- Low insertion loss for using high Q-value dielectric resonators
- Small and light for using high dielectric constant ceramics
- Excellent temperature stability for temperature
- Excellent mechanical stability without vibratile structure
- SMD and reflow soldering available
- Mountable by automatic placement machine

GPS Antenna

Features

- Antenna dimension is as small as Teflon antenna
- Provide highly stabilized performance
- Using high quality factor dielectric
- Low and tight temperature coefficient

Wei Bo Associates HK Limited

WEI BO

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WEI BO ASSOCIATES HK, LTD. IS A PRIVATELY HELD, HONG KONG REGISTERED COMPANY, FOUNDED IN 2014.OFFER CUTTING EDGE, WORLD CLASS RF & MICROWAVE PRODUCTS FROM THE COMFORTABLE CONFINES OF THE WORLD'S MOST CUSTOMER FRIENDLY BUSINESS ENVIRONMENT.

RF SWITCH DRIVERS

Part Number	Description	Control	Voltage 1	Voltage 2	Sink mA	Source mA
RFD2T-5N200-702	SP2T Switch Driver	TTL	5	-15 to -200	50	50
RFD3T-5N200-703	SP3T Switch Driver	TTL	5	-15 to -200	50	50

RF SWITCHES

Part Number	Freq Range (GHz)	Switch Topology	Tx Average Power (CW) (dBm)	Tx Peak Power (dBm)	Tx - Ant Insertion Loss (dB)	Return Loss (dB)	ISO (dB)	IP3 (dBm)	Status
MSW2T-020522-232	0.02 - 0.52	SP2T, symmetrical	60	60	0.7	15	40	65	Q3/20
MSW2T-2000-199	0.05 - 1.0	SP2T, asymmetrical	50	50	0.15	23	52	65	TBD
MSW2T-2001-199	0.4 - 4.0	SP2T, asymmetrical	50	50	0.3	17	46	65	TBD
MSW2T-2002-199	2.0 - 6.0	SP2T, asymmetrical	50	50	0.6	13	34	65	TBD
MSW2T-2030-192	0.05 - 1.0	SP2T, symmetrical	50	57	0.3	22	52	65	RELEASED
MSW2T-2031-192	0.4 - 4.0	SP2T, symmetrical	50	57	0.5	15	35	65	RELEASED
MSW2T-2032-192	2.0 - 6.0	SP2T, symmetrical	50	57	0.6	13	35	65	Q3/20
MSW2T-2040-193	0.05 - 4.0	SP2T, symmetrical	52	57	0.5	20	42	65	RELEASED
MSW2T-2040X-198	0.1 - 2.0	SP2T, symmetrical	56	60	0.25	15	45	65	RELEASED
MSW2T-2041-193	0.4 - 4.0	SP2T, symmetrical	52	57	0.7	20	30	65	RELEASED
MSW2T-2050-194	0.05 - 1.0	SP2T, asymmetrical	52	58	0.15	20	50	65	TBD
MSW2T-2051-194	0.4 - 4.0	SP2T, asymmetrical	52	58	0.3	17	34	65	TBD
MSW2T-2060-195	0.02 - 1.2	SP2T, symmetrical	50	57	0.25	23	53	65	RELEASED
MSW2T-2061-195	0.02 - 2.0	SP2T, symmetrical	50	57	0.25	13	40	65	RELEASED
MSW2T-2062-195	1.5 - 6.5	SP2T, symmetrical	50	57	0.7	13	34	65	Q3/20
MSW2T-0025-195	1.0 - 2.0	SP2T, asymmetrical	50	57	0.3	15	20/15	65	TBD
MSW2T-2022-191	0.05 - 1.0	SP2T, asymmetrical	52	57	0.2	20	40/23	65	TBD
MSW2T-2735-196	2.7 - 3.5	SP2T, asymmetrical-CW	57	60	0.4	16	37	65	RELEASED
MSW2T-2735-197	2.7 - 3.5	SP2T, asymmetrical-CCW	57	60	0.4	16	37	65	TBD
MSW2T-8512-740	8.5 - 12.0	SP2T, symmetrical	50	53	0.75	15	35	65	Q3/20
MSW3T-3100-209	0.05 - 1.0	SP3T, symmetrical	50	53	0.4	20	53	65	TBD
MSW3T-3101-209	0.2 - 4.0	SP3T, symmetrical	50	53	0.6	15	34	65	TBD
MSW3T-3200-150	0.05 - 3.0	SP3T, symmetrical	50	53	0.4	15	30	65	RELEASED
MSW3T-402103-332	0.4 - 1.0	SP3T, symmetrical	53	59	1.0	15	30	65	Q3/20
MSW5T-0310-505	0.03 - 1.0	SP5T, symmetrical	50	53	0.5	15	30	65	TBD
MSW5T-0310-515	0.03 - 1.0	SP5T, symmetrical	50	53	0.4	16	35	80	TBD
MSW6T-6000-600	0.03 - 0.5	SP6T, symmetrical	53	57	0.5	15	25	65	RELEASED
MSW6T-6100-600	0.002 - 0.03	SP6T, symmetrical	53	53	0.25	15	40	65	TBD
MSW6T-6040-600	0.03 - 0.5	SP6T, symmetrical	56	58	0.5	15	25	60	RELEASED
MSW6T-6040-601	0.03 - 0.5	SP6T, symmetrical	56	58	0.5	15	25	60	Q4/20

RF LIMITER

Part Number	Limiter Description	Freq. (GHz)	Insertion Loss (dB)	Return Loss (dB)	CW Input Power (dBm)	Peak Input Power (dBm)	Flat Leakage Power (dBm)	Spike Leakage (ergs)	Recovery Time (nsec)	Status
RFLM-200802MA-299	Passive, SMT	0.020 - 8.0	1.4	15	43	50	20	0.2	500	RELEASED
RFLM-300301QC-290	Quasi-Active, SMT	0.03 - 0.3	0.7	15	56	56	19	0.5	7,5	Q3/20
RFLM-300511QA-392	Quasi-Active, SMT	0.03 - 0.5	0.7	15	56	60	19	0.5	7	Q3/20
RFLM-301511QC-290	Quasi-Active, SMT	0.3 - 0.5	0.7	15	56	56	19	0.5	5	RELEASED
RFLM-301511QC-392	Quasi-Active, SMT	0.3 - 0.5	0.7	15	56	56	19	0.5	5	RELEASED
RFLM-401102QA-290	Quasi-Active, SMT	0.4 - 1.0	1.4	15	43	50	20	0.2	5	Q3/20
RFLM-401102QB-290	Quasi-Active, SMT	0.4 - 1.0	0.3	17	50	60	18	0.5	5	Q3/20
RFLM-401102QC-290	Quasi-Active	0.4 - 1.0	0.3	17	50	60	18	0.5	5	Q3/20
RFLM-501202LC-299	Passive, SMT	0.4 - 2.5	0.4	20	36	51	21	0.2	750	RELEASED
RFLM-501202MC-299	Passive, SMT	0.25 - 3.5	0.4	20	45	54	21	0.3	500	RELEASED
RFLM-052402QC-290	Quasi-Active, SMT	0.5 - 4.0	0.5	18	53	63	17	0.5	1,5	RELEASED
RFLM-961122MC-299	Passive, SMT	0.96 - 1.2	0.2	17	48	60	14	0.3	200	RELEASED
RFLM-961122XC-392	Quasi-Active, SMT	0.96 - 1.2	0.7	15	53	63	14	0.5	1	Q4/20
RFLM-011014QC-290	Quasi-Active, SMT	1.0 - 2.0	0.25	20	53	55	17	0.5	1,5	RELEASED
RFLM-102202HC-290	Quasi-Active, SMT	1.0 - 2.0	0.7	15	47	53	17	0.3	3	Q3/20
RFLM-102202QA-290	Quasi-Active, SMT	1.0 - 2.0	0.25	20	50	60	17	0.5	1,5	RELEASED
RFLM-102202QB-290	Quasi-Active, SMT	1.0 - 2.0	0.25	20	50	60	17	0.5	1,5	RELEASED
RFLM-102202QC-290	Quasi-Active, SMT	1.0 - 2.0	0.25	20	50	60	17	0.5	1,5	RELEASED
RFLM-102202XA-290	Quasi-Active, SMT	0.5 - 2.0	0.7	15	57	60	20	0.5	1	RELEASED
RFLM-011015QF-290	Quasi-Active, SMT	2.0 - 4.0	0.5	14	50	56	15	0.5	750	RELEASED
RFLM-102402QE-290	Quasi-Active, SMT	1.0 - 4.0	0.35	16	50	60	15	0.5	1	RELEASED
RFLM-102402QF-290	Quasi-Active, SMT	1.0 - 4.0	0.35	16	50	60	15	0.5	1	RELEASED
RFLM-252352QA-290	Quasi-Active, SMT	2.5 - 3.5	0.6	15	47	62	23	0.3	1,5	Q3/20
RFLM-252352QB-290	Quasi-Active, SMT	2.5 - 3.5	0.6	15	47	62	23	0.3	1,5	Q3/20
RFLM-252352QC-290	Quasi-Active, SMT	2.5 - 3.5	0.6	15	47	62	23	0.3	1,5	Q3/20
RFLM-262322HC-151	Quasi-Active, SMT	2.6 - 3.2	0.65	18	48	57	13	0.5	100	RELEASED
RFLM-202402QA-290	Quasi-Active, SMT	2.0 - 4.0	0.5	14	50	60	20	0.5	750	RELEASED
RFLM-202402QB-290	Quasi-Active, SMT	2.0 - 4.0	0.5	14	50	60	20	0.5	750	RELEASED
RFLM-202402QC-290	Quasi-Active, SMT	2.0 - 4.0	0.5	14	50	60	20	0.5	750	RELEASED
RFLM-202402QE-290	Quasi-Active, SMT	2.0 - 4.0	0.5	16	50	60	15	0.5	1	RELEASED
RFLM-202402QF-290	Quasi-Active, SMT	2.0 - 4.0	0.5	16	50	60	15	0.5	1	RELEASED
RFLM-202602HA-299	Passive, SMT	2.0 - 6.0	0.85	14	35	50	18	0.1	1	Q3/20
RFLM-202602HC-299	Passive, SMT	2.0 - 6.0	0.85	14	35	50	18	0.1	1	Q3/20
RFLM-502602HC-491	Passive, SMT	5.0 - 6.0	0.6	15	48	57	14	0.5	700	Q3/20
RFLM-202802LC-299	Passive, SMT	2.0 - 8.0	1.Oca	15	36	50	19	0.2	750	RELEASED
RFLM-202802MC-299	Passive, SMT	2.0 - 8.0	0.6	15	45	53	20	0.3	1,5	RELEASED
RFLM-202802QA-290	Quasi-Active, SMT	2.0 - 8.0	1.Oca	13	50	60	21	0.5	5	RELEASED
RFLM-202802QB-290	Quasi-Active, SMT	2.0 - 8.0	1.Oca	13	50	60	21	0.5	5	RELEASED
RFLM-202802QC-290	Quasi-Active, SMT	2.0 - 8.0	1.Oca	13	50	60	21	0.5	5	RELEASED
RFLM-872113HC-150	Passive, SMT	8.7 - 10.7	1.May	15	42	46	14	0.5	500	RELEASED
RFLM-802123QC-291	Passive, SMT	8.7 - 10.7	1.Şub	15	49	53	20	0.5	3	RELEASED
RFLM-143173HC-150	Passive, SMT	14.0 - 17.0	1.Şub	15	46	50	14	0.5	700	Q3/20

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- **Computer-On-Module Concept**
  - CPU module with standard PC core functions
  - Carrier board with customer specific functions & size
  - Logical alternative to a chip-down design effort
- **Computer-On-Module Benefits**
  - Faster time to market
  - Reduced development costs
  - Scalable product range
  - Allows customer focus on system features
  - Faster reaction to market trends
  - Second source philosophy
  - Minimize inventory cost

COM EXPRESS TYPE 7				COM HPC
				
Model	conga-B7E3	conga-B7AC	conga-B7XD	conga-HPC/cTLU
Processor	AMD EPYC™ 3000 Processor Series	Intel® Atom C3000 processor	Intel® Xeon™ and Intel® Pentium™ processor	11th Gen Intel® Core™ processor
DRAM	3x SO-DIMM DDR4 up to 96GB	3x SO-DIMM DDR4 up to 96GB	3x SO-DIMM DDR4 up to 96GB	2 SO-DIMM DDR4 up to 64 GB
Ethernet	"4x 10GbE with KR interface 1 x Gigabit Ethernet"	4x 10GbE with KR interface	"2x 10GbE with KR interface 1 x Gigabit Ethernet"	2 x 2,5 GbE
Mass Storage	-	eMMC 5.1 onboard flash up to 128 Gbyte (optional)	-	-
I/O Interfaces	32 x PCI Express GEN 3.0 lanes, 4 x USB 3.1 Gen1, 4 x USB 2.0 2 x SATA III (6Gb/s), LPC bus SPI, 2 x UART, SM-Bus	12 x PCI Express GEN 3.0 lanes, 8 x PCIe Gen2, 2 x USB 3.0 4 x USB 2.0, 2 x SATA III (6Gb/s) LPC bus, SPI 2 x UART, SM-Bus	24 x PCI Express GEN 3.0 lanes, 8 x PCI Express 2.0, 4 x USB 2.0 4 x USB 3.0, LPC bus SPI, I²C bus 2 x UART, 2 x SATA III (6Gb/s)	4 x PCIe Gen4, 8 x PCIe Gen3, 2 x USB 4.0, 2 x USB 3.2, 6 x SATA III (6Gb/s), 2 x UART, 12 x GPIOs, 2 x MIPI-CSI, 8 x USB 2.0
Video Interface	-	-	-	3x DP/HDMI/DP++ 1x eDP
Temperature	-40 to +85°C	-40 to +85°C	0 to +60°C	-40 to +85°C
Size	95 x 125 mm	95 x 125 mm	95 x 125 mm	95 x 120 mm

COM EXPRESS TYPE 6






Model	conga-TCV2	conga-TCA7	conga-TC570	conga-TC370	conga-TS370	conga-TR4
Processor	AMD Embedded Ryzen V2000 Embedded Series	Intel® Atom® x6000E, Intel® Pentium® and Celeron® J Processor Series	11th Gen Intel® Core™ processor	8th Generation Intel® Core™ processor	8th Generation Intel® Core™ processor	AMD Ryzen Embedded V1000 Series
DRAM	2x SO-DIMM DDR4 up to 64GB	2x SO-DIMM DDR4 up to 32GB	2x SO-DIMM DDR4 up to 64GB	2x SO-DIMM DDR4 up to 64GB	2x SO-DIMM DDR4 up to 64GB	2x SO-DIMM DDR4 up to 32GB
Ethernet	1x 2,5GbE TSN Ethernet	1x GbE with TSN support	1x 2,5GbE TSN Ethernet	1x GbE	1x GbE	1x GbE
Mass Storage	-	eMMC 5.1 onboard flash up to 128 Gbyte (optional)	-	-	-	-
I/O Interfaces	"8 x PCIe Gen3, PEG support x8, 2 x USB 3.1 Gen2, 8 x USB 2.0, 2 x SATA III (6Gb/s), SPI 2 x UART, 8 x GPIOs"	"Up to 6x PCIe Gen3, 2 x USB 3.1 Gen2, up to 8x USB 2.0, 2 x SATA III (6Gb/s), 2 x UART, (UART1 muxed with CAN), GPIOs, I²C bus SM-Bus, SPI LPC bus"	"8 x PCI Express GEN 3.0 lanes, PEG support x4 (PCIe Gen4), 4 x USB 3.1 Gen2, 8 x USB 2.0, 2 x SATA III (6Gb/s), SPI, 2 x UART, 8 x GPIOs"	"8 x PCI Express GEN 3.0 lanes, 3 x Serial ATA® Gen 3 (can be configured as RAID), 4 x USB 3.1 Gen2, 8 x USB 2.0, LPC bus (no DMA), I²C bus 2 x UART"	"8 x PCI Express GEN 3.0 lanes, 4 x Serial ATA Gen 3, 4 x USB 3.1 Gen 2 @ 10 GBit/s, 8 x USB 2.0, 1 x PEG x16 Gen 3, LPC bus, I²C bus (fast mode, 400 kHz, multi-master), 2 x UART"	"4 x PCI Express™ 3.0 lanes, 4 x PCI Express™ 2.0 lanes, 1 x PEG 3.0 x8, 2 x USB 3.1 Gen2, 2 x USB 3.1 Gen1, 8 x USB 2.0, 2 x SATA 6 Gb/s, I²C bus (fast mode, 400 kHz, multi-master), LPC bus, SPI, SM-Bus, 2 x UART"
Video Interfaces	"3x DP/HDMI/ DP++ or eDP /LVDS"	"1x LVDS/eDP 2x DP/HDMI"	"3x DP/HDMI/ DP++ or eDP/LVDS or VGA (optional)"	"HDMI 2.0a DisplayPort 1.2 eDP 1.4"	"3x HDMI / DisplayPort 1.2 Dual channel LVDS transmitter 1 x VGA"	up to 4 simultaneous Displays
Temperature	0 to +60°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C
Size	95 x 95 mm	95 x 95 mm	95 x 95 mm	95 x 95 mm	95 x 125 mm	95 x 125 mm

COM EXPRESS TYPE 10


Model	conga-MA7	conga-MA5
Processor	Intel® Atom® x6000E, Intel® Pentium® and Celeron® J processor	5th Generation Intel® Atom™ processor
DRAM	max. 16GB onboard LPDDR4x	onboard DDR3L memory support for up to 8 Gbyte
Ethernet	1x GbE with TSN support	1x GbE
Mass Storage	eMMC 5.1 onboard flash up to 128 Gbyte (optional)	eMMC 5.0 interface up to 128GB (optional)
I/O Interfaces	"4 x PCIe Gen3, 2 x USB 3.1 Gen2, up to 8x USB 2.0, 2 x SATA III (6Gb/s), 1 x SDIO (option), 2 x UART, CAN Bus, GPIOs, I²C bus, SM-Bus, SPI, LPC bus"	"4 x PCIe Gen2, 2 x USB 3.0, 6 x USB 2.0, 2 x SATA3, SDIO, LPC bus, SM-Bus, I²C bus, 2 x UART"
Video Interface	"LVDS/eDP DP/HDMI"	"LVDS/eDP DP/HDMI"
Temperature	-40 to +85°C	-40 to +85°C
Size	55 x 84 mm	55 x 84 mm

SMARC





Model	conga-SA7	conga-SMX8-Mini	conga-SMX8X	conga-SMX8	conga-SA5
Processor	Intel® Atom® x6000E and Intel® Pentium® and Celeron® J Series processor	NXP i.MX8M Mini processor series	Ultra Low Power NXP i.MX8-X series	NXP i.MX8 ARM Cortex-A72, Cortex-A53 and Cortex-M4 processors	5th Generation Intel® Atom™ / Celeron® / Pentium® processors
DRAM	"max. 16GB onboard LPDDR4x"	Up to 4 GByte onboard LPDDR4	Up to 4 GByte onboard LPDDR4	Up to 8 GByte onboard LPDDR4	Up to 8 GByte onboard LPDDR4
Ethernet	2x GbE with TSN support	1x GbE	2x GbE	2x GbE	2x GbE
Mass Storage	eMMC 5.1 onboard flash up to 64 Gbyte (optional up to 128 Gbyte)	eMMC 5.1 up to 128 Gbyte	eMMC 5.1 up to 128 Gbyte	eMMC 5.1 up to 128 Gbyte	eMMC 5.0 onboard flash up to 128 Gbyte
I/O Interfaces	"2 x USB 3.1 Gen2 (1x OTG), 6 x USB 2.0 (1x OTG), 1 x SATA III (6Gb/s), 1 x SDIO, up to 4x PCIe Gen3, 2 x I²C bus, 1 x SPI, 1 x eSPI, 4 x UART, GPIOs, 2 x CAN Bus, 1 x I2S, onboard M.2 1216 WiFi/BT module (optional)"	"5 x USB 2.0 (shared with 1x USB OTG client), 1 x PCIe 2.0, 1 x SDIO 3.0, I²C bus, 1 x SPI, USB 2.0 (shared with 1x USB OTG client), up to 3x UART (1x with handshake), GPIOs, optional M.2 1216 WiFi/BT module"	"5 x USB 2.0 (shared with 1x USB OTG client), 1 x USB 3.0, 1 x SDIO 3.0, 1 x PCI Express™ 3.0 lanes, I²C bus, 1 x SPI, 1 x eSPI, USB 2.0, up to 4x UART (2x with Handshake (1x shared with FlexCAN), 2 x FlexCAN, GPIOs, optional M.2 1216 WiFi module (soldered down)"	"5 x USB 2.0 (shared with 1x USB OTG client), 1 x USB 3.0, 1 x SATA III (6Gb/s), 1 x SDIO 3.0, Up to 3x PCIe 3.0 (one shared with SATA III, 2 root ports), I²C bus, QSPI, 4 x UART, 2 x FlexCAN, optional M.2 1216 WiFi module (soldered down)"	"2 x USB 3.0, 4 x USB 2.0, 1 x SATA3, SDIO, up to 4x PCIe Gen2, 2 x I²C bus, 2 x SPI, 4 x UART, optional M.2 1216 WiFi module (soldered down)"
Video Interfaces	"1x LVDS/eDP/ MIPI-DSI, 1x DP/ HDMI"	1x LVDS/eDP/MIPI-DSI	"2x LVDS or 1x LVDS and 1xLVDS/ HDMI"	"1x HDMI/DP, 1x DP/eDP, 1x LVDS/ MIPI-DSI"	"1x Dual Channel LVDS, 1x DP++, 1x HDMI/eDP"
Temperature	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C	-40 to +85°C
Size	82 x 50 mm	82 x 50 mm	82 x 50 mm	82 x 50 mm	82 x 50 mm

QSEVEN


Model	conga-PA7	conga-PA5
Processor	Intel® Atom® x6000E, Intel® Pentium® and Celeron® J processor series	5th Generation Intel® Atom™ / Celeron® / Pentium® processors
DRAM	"max. 16GB onboard LPDDR4x"	up to 8GB onboard DDR3L
Ethernet	1x GbE with TSN support	1x GbE
Mass Storage	eMMC 5.1 onboard flash up to 64 Gbyte (optional up to 128 Gbyte)	eMMC 5.0 onboard flash up to 64 Gbyte
I/O Interfaces	"2 x USB 3.1 Gen2, up to 8x USB 2.0 (1x OTG), 2 x SATA III (6Gb/s), SDIO, 4 x PCIe Gen3, I²C bus, SM-Bus, SPI, UART, CAN Bus, LPC bus"	"3 x PCIe Gen2, 1 x USB 3.0, 5 x USB 2.0, 2 x SATA3, SDv3, SM-Bus, I²C bus, UART"
Video Interfaces	"1x LVDS/eDP/MIPI-DSI 1x DP/HDMI"	"1x LVDS/eDP 1x DP/HDMI"
Temperature	-40 to +85°C	-40 to +85°C
Size	70 x 70 mm	70 x 70 mm

SINGLE BOARD COMPUTERS

					
Model	conga-IC370	conga-IA5	conga-JC370	conga-PA7	conga-PA5
Processor	8th Generation Intel® Core™ Processors	5th Generation Intel® Atom™ / Celeron® / Pentium® processors	8th Generation Intel® Core™ Processors	Intel® Atom® x6000E, Intel® Pentium® and Celeron® J processor	5th Generation Intel® Atom™ / Celeron® / Pentium® processors
DRAM	2x SO-DIMM DDR4 up to 64GB	up to 8GB onboard DDR3L	2x SO-DIMM DDR4 up to 64GB	onboard LPDDR4x with up to 16 GB	up to 8 GB onboard LPDDR4
Ethernet	2x GbE	1x GbE	2x GbE	2x GbE with TSN support	2x GbE
Mass Storage				eMMC 5.1 onboard flash up to 64 Gbyte (optional up to 128 Gbyte)	
I/O Interfaces	"2x SATA/eSATA/ SATADOM, USB 3.1 Gen. 2, 1x SATA Power connector (header), 1x Backlight (Power, control), 2x USB 2.0 internally, 2x COM (RS232 / RS-485 / RS422), I²C/SM Bus, PCIe slot (PCIe x4) | miniPCIe card slot full/half-size (PCIe/ USB/opt. SIM) | M.2 key B size, 2242/3042/2280 (PCIe x2/USB/ SATA/SIM/Intel® Optane™) M.2 key E size 2230 (PCIe/CNVio/USB) | microSIM card slot | microSD card slot"	"3 x PCIe Gen2, 1 x USB 3.0, 5 x USB 2.0, 2 x SATA3, SDv3, SM-Bus, I²C bus, UART"	"SATA/eSATA/ SATADOM, Dual USB 2.0 COM port (RS232/422/485), 2x pin COM ports (RS232), opt. CAN, 8 bit general purpose I/O I/O (opt. 8 GPIOs), I²C/SM Bus, M.2 key M size 2280 (PCIe x4/SATA/ Intel® Optane™) | M.2 key B size 2242/3042 (PCIe/ USB/SIM) | M.2 key E size 2230 (PCIe/CNVio/ USB) | miniPCIe card slot full/half-size (PCIe/SATA/ USB/opt. SIM) | microSIM card slot"	"1 x USB 3.1 Gen2 Type C (with Power Delivery and DP), 1 x USB 3.1 Gen2 Type A 2x USB 2.0, 1x Backlight power connector (5V, 12V), 2x COM (RS232/422/485), Fan Connector with PWM, 3x Feature Connector, 1x M.2 key ID B type 2280 (2 PCIe lanes/SATA, USB 2.0), M.2 key ID E (1 PCIe lane, USB 2.0), 2x CAN (opt.)"	"1 x USB 3.0 Type C (with PD and DP++), 2 x USB 3.0, 1x miniPCIe or mSATA full size, 1x SATA, 2x USB 2.0, 1x Backlight power connector, 1x Line Out, 1x Mic In, 1x S/PDIF Out, 1x Power In (+12V), 2x COM (RS232 / RS-485 / RS422), 1x Fan Connector, 1x microSD card slot, MIPI CSI-2"
Video Interfaces	"LVDS 24bit Dual channel or eDP opt. internal DP (shared with external DP++)"	"1x LVDS/eDP 1x DP/HDMI"	"1x DP++/HDMI 1x LVDS/eDP"	"1x DP++ 1x LVDS/eDP/MIPI-DSI"	"1x DP++ 1x LVDS"
Temperature	"0 to +60°C optional -40 to +85°C"	-40 to +85°C	"0 to +60°C optional -40 to +85°C"	-40 to +85°C	-40 to +85°C
Size	170 x 170 mm	70 x 70 mm	146 x 102 mm	100 x 72 mm	100 x 72 mm

DIAMOND SYSTEMS
www.diamondsystems.com

DIAMOND SYSTEMS HAS BEEN DELIVERING EMBEDDED COMPUTING PRODUCTS WITH INNOVATIVE FEATURES, RUGGED PERFORMANCE, HIGH FEATURE DENSITY, AND INCREASED VALUE TO CUSTOMERS ALL OVER THE WORLD IN ALL MAJOR INDUSTRIES.

This guide presents a sample of our current standard product offerings. We welcome the opportunity to serve you with one of these products or a custom solution based on our vast library of technologies and our worldwide design and manufacturing resources.

Nvidia Solutions

	FLOYD	ZIGGY	JETHRO	STEVIE	ELTON
					
Jetson Module	Nano&Xavier NX	TX2/TX2i	TX2/TX2i	AGX Xavier	AGX Xavier
Camera	3x CSI-2 4-lane ports	N/A	2x CSI 4-lane	8x CSI 2-lane	8x CSI 2-lane
Display	2x HDMI	1x HDMI	1x HDMI	2x HDMI	1x HDMI, 1x LVDS
Mass Storage	mPCIe M.2 NVME 2280 Micro SD	Micro SD	M.2 SATA 2242 Micro SD	M.2 PCIe x4 NVMe 2280	M.2 PCIe x4 NVMe 2242
Serial Ports	2x RS-232/422/485	2x RS-232	2x RS-232	2x RS-232	2x RS-232
USB	1x USB 3.0 2x USB 2.0	1x USB 3.0 1x USB 2.0	N/A	1x USB 3.0 2x USB 2.0	2x USB 3.0 2x USB 2.0
Ethernet	2x GbE with PoE	1x GbE	1x GbE	2x GbE	2x GbE
CAN	1	N/A	N/A	2	2
Integrated GPIO	8	13	13	13	13
Integrated DAQ	N/A	6x 12-16-bit A/D 2x 12-bit D/A	6x 12-16-bit A/D 2x 12-bit D/A	6x 12-16-bit A/D 2x 12-bit D/A	6x 12-16-bit A/D 2x 12-bit D/A
Expansion	1x PCIe/USB MiniCard	N/A	1x PCIe/USB MiniCard SkyWire Modem Socket	1x PCIe/USB MiniCard	1x PCIe/USB MiniCard SkyWire Modem Socket 1x PCIex8 4x PCIex1 PCI Bus Links
Size	143x76 mm	63x67x96 mm	76x107 mm	100x87 mm	102x152 mm

Ethernet Switches

Diamond's EPSILON Ethernet switches feature 1 to 10Gbps speeds, Layer 2+ / Layer 3 operation, IEEE-1588 PTP, latching connectors, thicker PCBs, and -40 to +85oC operating temperature. These products are ideal for Ethernet backbones in vehicles.


EPSM-10GX4


EPS-24G4X


EPS-12G2


EPS-12000-CM


EPS-8100

PRODUCT	DESCRIPTION	COPPER PORTS	FIBER PORTS	FORM FACTOR	DIMENSIONS	NOTES
EPS-8100	Layer 2+ managed 8-Port Gigabit Ethernet switch	8	x	PC/104	90mm x 96mm	Industry-leading rugged compact switch for vehicle applications
EPS-12G2	Layer 2+ managed 12-Port Gigabit Ethernet Switch	12	2x1G/2.5G	COM Express	95mm x 125mm	Economical 12 port rugged switch with dual fiber backbone capability
EPS-12G1	Layer 2+ managed 12-Port Gigabit Ethernet Switch	12	1x1G/2.5G	COM Express	95mm x 125mm	Economical 12 port rugged switch with fiber uplink
EPS-12G0	Layer 2+ managed 12-Port Gigabit Ethernet Switch	12	x	COM Express	95mm x 125mm	Economical 12-port rugged switch
EPS-12000-CM	Layer 2+ / Layer 3 managed 12-Port Gigabit Ethernet Switch	12	x	COM Express Mini	84mm x 55mm	Ultra-compact, rugged, IEEE-1588 capable
EPS-24016-104	Layer 2+ managed 16-Port Gigabit Ethernet switch	16	x	PC/104	90mm x 96mm	High port density, rugged design
EPS-24026-104	Layer 2+ managed 26-Port Gigabit Ethernet switch	24	2x1G/2.5G	PC/104	90mm x 96mm	High port density, rugged design
EPSM-10GX4	Layer 2+ / Layer 3 managed 28-Port Gigabit Ethernet switch module	24	4 10G	COM Express Mini	84mm x 55mm	Switch module for custom solutions; Layer 3 and IEEE-1588 capability
EPS-24G4X	Layer 2+ / Layer 3 managed 28-Port Gigabit Ethernet Switch	24	4 10G	--	146mm x 102mm	Full featured switch, 10G Layer 3 and IEEE-1588 capability

Rugged Systems

The SABRE family offers rugged mission computers and Ethernet switches for use in the most challenging vehicle environments. MIL-STD-461, 704, and 1275 compliance is available. Systems have been tested to MIL-STD-810G specifications up to 75G shock.

ETHERNET SWITCHES	SABRENET 12000	SABRENET 24000	SABRENET 24G2X
Copper ports	12x 1G	24x 1G	24x 1G
Fiber ports	N/A	N/A	2x 10G
Input voltage	6-34VDC	5-34VDC	5-34VDC
PTP option	Yes	Yes	Yes
Dimensions mm	162Wx137Dx66H	198Wx175Dx66H	198Wx175Dx66H

COMPUTERS	SABRECOM VNS	SABRECOM ARS	SABRECOM ZTA
Processor	"Skylake 6th Gen Core i7 i7-6600U 2C 2.6GHz"	"Bay Trail E3845 2C 1.91GHz"	"Bay Trail E3845 Apollo Lake E3940/N4200"
RAM	4-20GB	4GB	4-8GB
Mass storage	32-256GB SSD	32-256GB SSD	32-256GB SSD
Serial ports	4x RS-232/422/485	4x RS-232/422/485	4x RS-232/422/485
USB ports	4x USB 2.0, 2x USB 3.0	2x USB 2.0	4x USB 2.0, 1x USB 3.0
Ethernet	2x 10/100/1000	2x 10/100/1000	2x 10/100/1000
Integrated GPIO	16	16-24	16-24
"Integrated data acquisition"	N/A	"16x 16-bit A/D 4x 16-bit D/A"	"16x 16-bit A/D 4x 16-bit D/A"
Expansion	"PCIe/104, PCI-104, and MiniCard sockets"	"PC/104-Plus: ISA & PCI 1x MiniCard "	"1x PCIe/USB MiniCard 1x M.2 SATA socket"
"Standard enclosure size"	198W x 175D x 66H mm	198W x 175D x 66H mm	162W x 137D x 66H mm
"Operating system support"	"Windows 10 IOT LTSC; Linux Ubuntu 16.04 LTS; 64-bit support"	"Windows 7/10; Linux Ubuntu 16.04 LTS; 32/64-bit support"	"Windows 7/10; Linux Ubuntu 16.04 LTS; 32/64-bit support"

I/O Expansion Modules

Diamond Systems offers a wide range of I/O modules in PC/104 and PCIe MiniCard form factors. Our analog and digital I/O modules are supported by our industry-leading Universal Driver software, consisting of a C language programming library along with example programs and GUI demos that provide instant verification of system operation. All products meet -40°C to +85°C operating temperature.

ANALOG I/O													
Product	**Form Factor**	**#A/D**	**Res**	**Max**	**Min**	**Gain**	**Max**	**Autocal**	**FIFO**	**#D/A**	**Res**	**Max**	**Min**	**GPIO**
DMM-32DX-AT	PC/104	32 SE, 16 DI	16	±10V	0-.625V	Program	250K	Auto	1024	4	16	±10V	0-5V	24 I/O
DMM-32X-AT	PC/104	32 SE, 16 DI	16	±10V	0-.625V	Program	250K	Yes	1024	4	12	±10V	0-5V	24 I/O
DMM-16R-AT	PC/104	16SE, 8 DI	16	±10V	0-1.25V	Program	100K	Yes	512	4	12	±10V	0-5V	8 In, 8 Out
DMM-16RP-AT	PC/104-Plus	16SE, 8 DI	16	±10V	0-1.25V	Program	100K	Yes	512	4	12	±10V	0-5V	8 In, 8 Out
DMM-AT	PC/104	16SE, 8 DI	12	±10V	0-1.25V	Program	100K	Yes	512	2	12	±10V	0-5V	8 In, 8 Out
DMM-XT	PC/104	16SE, 8 DI	12	±10V	0-1.25V	Jumper	100K			2	12	0-5V	0-5V	8 In, 8 Out
DS-MPE-DAQ0804	MiniCard	8SE, 4 DI	16	±10V	0-5V	Program	100K		2048	4	16	0-5V	0-2.5V	14 I/O
RMM-1616A-XT	PC/104									16	16	**Voltage ranges:** ±10V, ±5V, 0-10V, 0-5V		48 I/O
RMM-816A-XT	PC/104									8	16			48 I/O
RMM-416A-XT	PC/104									4	16			48 I/O
RMM-1616AP-XT	PC/104-Plus									16	16	**Current ranges:** 0-20mA, 0-24mA, 4-20mA		48 I/O
RMM-816AP-XT	PC/104-Plus									8	16			48 I/O
RMM-416AP-XT	PC/104-Plus									4	16			48 I/O

DMM-32DX-AT

DMM-16RP-AT

RMM-1616AP-XT

GPIO-MM-XT

DS-MPE-DAQ0804

DS-MPE-GE210
Ethernet Minicard

DS-MPE-GPIO

DS-MPE-CAN2L
Ethernet Minicard

DIGITAL I/O

Product	Form Factor	#GPIO	Voltage	Buffered	Direction	Opto	Relays	Load	Counters	Ctr Bits	Max Rate
OMM-XT	PC/104	48	5V		Programmable				3	16	10MHz
OMM-DIO-XT	PC/104	48	5V		Programmable						
GPIO-MM-XT	PC/104	100	5V	Yes	Programmable				10	16	10MHz
DS-MPE-GPIO	MiniCard	36	5V/3.3V	Yes	Programmable				8	32	50MHz
PMM-P	PC/104						16 SPDT	30VDC/2A			
OPMM-1616-XT	PC/104					16 In 3-30VDC	16 SPDT	30VDC/2A			
IR104-PBF	PC/104					20 In 3-24V	20 SPST	30VDC/5A			

EMM-8EL-XT

EMM-8P-XT

EMM-8PLUS-XT

EMM-4M-XT

EMM-OPT4-XT

DS-MPE-SER4M

DS-MPE-OPT4232

SERIAL I/O

Product	Form Factor	#RS-232	Max Rate	#RS-422	Max Rate	#RS-485	Max Rate	Isolated	Protocol	Address	GPIO
EMM-8EL/4EL-XT	PCIe/104	8/4	1Mbps	8/4	1Mbps	8/4	1Mbps	Yes	Program	Program	8
EMM-8E/4E-XT	PCIe/104	8/4	1Mbps	8/4	20Mbps	8/4	20Mbps		Program	Program	8
EMM-8P-XT	PC/104	8	480Kbps	8	1.5Mbps	8	1.5Mbps		Program	Program	8
EMM-4M-XT	PC/104	4	1Mbps	4	1.5Mbps	4	1.5Mbps		Jumper	Jumper	
EMM-OPT4-XT	PC/104	4	230Kbps	4	6.25Mbps	4	6.25Mbps	Yes	Jumper	Jumper	24
EMM-8PLUS-XT	PC/104-Plus	8	480Kbps	8	6.25Mbps	8	6.25Mbps		Jumper	Program	8
DS-MPE-SER4M	MiniCard	4	1Mbps	4	10Mbps	4	10Mbps		Software	Auto	
DS-MPE-OPT4232	MiniCard	4	1Mbps	0		0		Yes	N/A	Auto	
DS-MPE-OPT4485	MiniCard	0		0		4	1Mbps	Yes	N/A	Auto	

STATEK
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IN 1970, STATEK CORPORATION WAS THE FIRST COMPANY TO USE SEMICONDUCTOR TECHNOLOGIES SUCH AS PHOTOLITHOGRAPHY, CHEMICAL MILLING AND MICROMACHINING TO MANUFACTURE QUARTZ RESONATORS IN WAFER FORM. TODAY, STATEK REMAINS AT THE FOREFRONT OF INNOVATION IN THE DESIGN, DEVELOPMENT AND MANUFACTURING OF HIGHLY RELIABLE, ULTRA-MINIATURE QUARTZBASED FREQUENCY CONTROL PRODUCTS.

Military Product Features

- Extreme high shock survivability (highest in the industry)
- Ultra-miniature and low-profile packaging
- Excellent long-term aging
- Full product traceability
- High stability and high accuracy
- Extended temperature ranges (-55°C to 225°C)

Surface Mount Quartz Crystals

Key Features:

- Ultra-Miniature
- Frequencies from 10 kHz to 250 MHz
- Highest Shock Survivability in the Industry
- Tight Frequency Stability
- Low Acceleration Sensitivity
- High Reliability
- Excellent Long-Term Aging

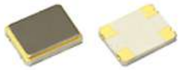
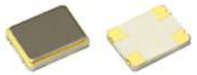
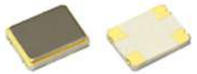
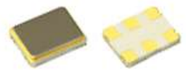
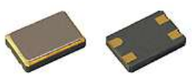
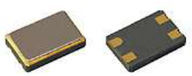
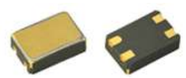
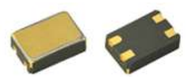
CRYSTAL MODEL		PACKAGE (MM)	FREQUENCY RANGE
CX20		2.5 x 1.2	16 MHz to 50 MHz
CX18		1.6 x 1.0	30 MHz to 100 MHz
CX17		4.8 x 3.0	12 MHz to 200 MHz
CX16		2.0 x 1.2	24 MHz to 100 MHz 32 kHz to 180 kHz
CX11		3.2 x 1.5	32 kHz to 240 kHz 16 MHz to 250 MHz
CX11L		3.2 x 1.5	16 MHz to 250 MHz (Telemetry Crystal)
CX11LHG High Shock		3.2 x 1.5	16 MHz to 50 MHz
CX9HT High Temperature		4.1 x 1.5	32 kHz to 160 kHz 14 MHz to 250 MHz
CX4		5.0 x 1.8	30 kHz to 250 kHz 600 kHz to 1.4 MHz 14 MHz to 250 MHz
CX4HG High Shock		5.0 x 1.8	14 MHz to 50 MHz
CX4HT High Temperature		5.0 x 1.8	30 kHz to 250 kHz 600 kHz to 2.5 MHz 14 MHz to 250 MHz
CX1		8.0 x 3.6	10 kHz to 600 kHz 530 kHz to 2.1 MHz 6 MHz to 250 MHz
CX1HG High Shock		8.0 x 3.6	6 MHz to 250 MHz
CX1HT High Temperature		8.0 x 3.6	10 kHz to 600 kHz 530 kHz to 2.1 MHz 6 MHz to 250 MHz
SWCX1 (swept quartz)		8.0 x 3.6	6 MHz to 250 MHz

Surface Mount Oscillators

Key Features:

- Highest Shock Survivability in the Industry
- Low Phase Noise
- Fast Start-up
- Low Power
- Low Acceleration Sensitivity
- Temperature Range of -65 °C to +275 °C
- Full MIL Testing

OSCILLATOR MODEL		PACKAGE (MM)	FREQUENCY RANGE
CXOU		2.0 x 1.2	32 kHz to 100 kHz
CXOL		3.2 x 1.5	32 kHz to 100 kHz
CXOLAT		3.2 x 1.5	32.768 kHz
CXOLHG High Shock		3.2 x 1.5	16kHz to 32.768 kHz
CXOLHT Performance to 200°C Shock to 100,000g		3.2 x 1.5	16 kHz to 50 MHz
CXOLP Low Power		3.2 x 1.5	1 MHz to 8.5 MHz
CXOQ		2.5 x 2.0	16 kHz to 100 MHz
CXOQHG High Shock		2.5 x 2.0	16 kHz to 100 MHz
STXO Tight Frequency Stability		3.2 x 2.5	10 MHz to 70 MHz
STXOHG Shock to 100,000g		3.2 x 2.5	10 MHz to 70 MHz
CXOX		3.2 x 2.5	16 kHz to 160 MHz
CXOXHT High Temperature		3.2 x 2.5	32.768 kHz 1 MHz to 50 MHz

OSCILLATOR MODEL		PACKAGE (MM)	FREQUENCY RANGE
CXOXHG High Shock		3.2 x 2.5	32.768 kHz 16 kHz to 160 MHz
CXOXULP Ultra Low Power		3.2 x 2.5	32.768 kHz
CXOXULPHT High Temperature Ultra Low Power		3.2 x 2.5	32.768 kHz
CXOXLPN Low Phase Noise High Shock		3.2 x 2.5	10 MHz to 125 MHz
CXOXLPNR Radiation Tolerant		3.2 x 2.5	20 MHz to 125 MHz
CXOMK		6.5 x 5.0	32.768 kHz 200 kHz to 200 MHz
CXOMKHT High Temperature		6.5 x 5.0	32.768 kHz 200 kHz to 50 MHz
CXOMKHG High Shock		6.5 x 5.0	32.768 kHz 200 kHz to 200 MHz
LVDS		3.2 x 5.0 7.0 x 5.0	10 MHz to 160 MHz
HTO57 High Temperature		7.0 x 5.0	32.768 kHz 1.5 MHz to 50 MHz
HTXO High Temperature		7.5 x 5.0	32.768 kHz 1.5 MHz to 50 MHz
HGXO High Shock		7.5 x 5.0	460 kHz to 50 MHz
HGXOHT High Shock High Temperature		7.5 x 5.0	32.768 kHz 460 kHz to 50 MHz

EUROQUARTZ
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EUROQUARTZ LIMITED IS AN INDEPENDENT, UK-BASED, MANUFACTURER AND SUPPLIER OF QUARTZ CRYSTALS, OSCILLATORS, FILTERS AND FREQUENCY-RELATED PRODUCTS TO THE ELECTRONICS MANUFACTURING INDUSTRY WORLD-WIDE.

Low Current Applications Standard

CLOCKS

Standard Clock Oscillator – Ultra Low Current

Frequency Range	156kHz – 160MH
Supply Voltage	1V /2.5V and 3.3V
Current Consumption	1.1mA – 5.0mA
Package Sizes	7x5 mm

XOA Series -
Real time clock and precision timing

Current Consumption	32µA - 36µA
Frequencies	27.3kHz – 100kHz
Package Sizes	3.2x2 /5x3.2mm/7x5mm

XOK Series -
Standard Clock Oscillator – Ultra Low Current

Current Consumption	1.1mA – 5mA
Frequencies	156kHz – 160MHz
Package Sizes	5x3.2mm/7x5mm

TCXO - EME32T -
Real time clock, GPS and Smart metering

Current Consumption	1.5µA
Frequencies	32.768kHz
Package Sizes	3.2x2.5mm

Low EMI Applications

SPREAD SPECTRUM

HM R Group - Reduces Electromagnetic Interference

Frequency Range	3.5 – 165MHz
Spread Down	-0.5% Ctre-±0.25
Current consumption	10mA - 35mA (Typical)
Package Sizes	7x5mm and 5x3.2mm

HM Y Group - Reduces Electromagnetic Interference

Frequency Range	8 – 165MHz
Supply Voltage	10mA - 44mA (Typical)
Current Consumption	-1% Ctre ±0.5%
Package Sizes	Package Sizes 7x5mm and 5x3.2mm

HM P Group - Reduces Electromagnetic Interference

Frequency Range	8 – 165MHz
Supply Voltage	10mA - 44mA (Typical)
Current Consumption	-1% Ctre ±0.5%
Package Sizes	7x5mm and 5x3.2mm

HM B Group - Reduces Electromagnetic Interference

Frequency Range	3.0 – 200MHz
Supply Voltage	-1.0% Ctre ±3.0%
Current Consumption	10 -25mA Typical
Package Sizes	7x5mm and 5x3.2mm

Differential Outputs

LVPECL VCXO'S

GPQF Series - Differential LVPECL Output VCXO

Frequency Range	10 – 1500MHz
Pulling Range	±90ppm min
Current consumption	16mA Typical
Package Sizes	7x5mm

GPQN Series - Differential LVPECL Output VCXO

Frequency Range	8 – 165MHz
Supply Voltage	10mA - 44mA (Typical)
Current Consumption	-1% Ctre ±0.5%
Package Sizes	Package Sizes 7x5mm and 5x3.2mm

Differential Outputs

LVDS VCXO

Differential LVDS VCXO

Frequency Range	10.0 – 1450MHz
Integrated Jitter	0.2nS Typical
Current consumption	25mA Typical
Package Sizes	7x5 , 5x3.2 and 3.2x2.5

Differential LVDS VCXO

Frequency Range	10.0 – 1450MHz
Pulling Range	100ppm Min
Current consumption	16mA Typical
Package Sizes	7x5, 5x3.2 and 3.2x2.5

Voltage Controlled

VCXO SERIES	
G Series - Voltage Controlled Oscillator CMOS Output	
Frequency Range	1.0 – 50.0MHz
Pulling Range	±80ppm Min
Phase Jitter	1.0pS Max
Package Sizes	7x5/ 5x3.2/3x2.2 mm
GTQF Series - Voltage Controlled Oscillator CMOS Output	
Frequency Range	10 – 245.0MHz
Pulling Range	±90ppm Min
Phase Jitter	0.9pS Typical
Package Sizes	7x5and 5x3.2mm
GTQN Series - Voltage Controlled Oscillator CMOS Output	
Frequency Range	10 – 245.0MHz
Pulling Range	±90ppm Min
Phase Jitter	0.6pS Typical
Package Sizes	7x5and 5x3.2mm
GPQN Series - Voltage Controlled Oscillator – PECL Output	
Frequency Range	10MHz – 1450.0MHz
Pulling Range	±90 - 200ppm
Phase Jitter	0.6pS Typical
Package Sizes	7x5 and 5x3.2mm
GDQF Series - Voltage Controlled Oscillator – LVDS Output	
Frequency Range	10MHz – 1450.0MHz
Pulling Range	±100ppm
Phase Jitter	1.2 pS Typical
Package Sizes	7x5 and 5x3.2mm
GDQN Series - Voltage Controlled Oscillator – LVDS Output	
Frequency Range	10MHz – 1450.0MHz
Pulling Range	±100ppm
Phase Jitter	0.6pS Typical
Package Sizes	7x5 and 5x3.2mm

Differential Outputs

LVDS CLOCKS	
HDK Series - Differential LVDS Output Waveform	
Frequency Range	10 – 220MHz
Integrated Jitter	0.2pS Typical
Current consumption	16mA Typical
Package Sizes	7x5 , 5x3.2 and 3.2x2.5
HDQF Series - Differential LVDS Output Waveform	
Frequency Range	10 – 1450MHz
Integrated Jitter	0.9pS Typical
Current consumption	16mA Typical
Package Sizes	7x5 , 5x3.2

Military & Aerospace

1000BM Series - 14 pin DIL Clock CMOS	
Frequency Range	10MHz – 40MHz
Input Voltage	3.3V/5V
Stability	±50ppm
Current Consumption	10 ~ 70 mA
75000 BM Series - 7x5mm smd Clock CMOS	
Frequency Range	1MHz – 60MHz
Input Voltage	1.8V ~ 5V
Stability	±50 ~ ±100ppm
Current Consumption	7mA max (15pF)
STXO Series - 3.2x2.5mm High Shock smd Clock	
Frequency Range	10MHz – 80MHz
Input Voltage	3.3V/5V
Current Consumption	3mA max
Phase Noise	-163 dBc/Hz
CXOLHG Series - 3.2x2.5mm High Shock smd Clock	
Frequency Range	10MHz – 80MHz
Input Voltage	2.5V/3V/3.3V
Current Consumption	3mA max
Phase Noise	-163 dBc/Hz
T1307 Series - TCXO Ulta-low vibration sensitivity	
Frequency Range	10MHz – 50MHz
Input Voltage	3.3V,5V or 12V
Current Consumption	6mA max
Phase Noise	-157dBc/Hz
YH1300 Series - OCXO Ulta-low vibration sensitivity	
Frequency Range	10MHz – 50MHz
Input Voltage	3.3V/5V
Low g snsitivity	5x10-11/g
Phase Noise	-165dBc/Hz

Differential Outputs

LVDS CLOCKS	
HDQN Series - Differential LVDS Output Waveform	
Frequency Range	10 – 1450MHz
Integrated Jitter	0.6pS Typical
Current consumption	15mA – 31mA
Package Sizes	7x5 , 5x3.2
HCK Series - Non-PLL Differential LVDS Output Waveform	
Frequency Range	13.50 – 220MHz
Integrated Jitter	0.2pS Typical
Current consumption	25mA Typical
Package Sizes	7x5 , 5x3.2 and 3.2x2.5

iKey

IKEY
www.ikey.com

IKEY IS A FAMILY-OWNED AND OPERATED BUSINESS THAT HAS PERFECTED THE DESIGN AND MANUFACTURE OF PREMIUM QUALITY KEYBOARDS OVER THE PAST 31 YEARS.

DU-5K-FSR DESKTOP KEYBOARD WITH FORCE SENSING RESISTOR

- 10-Key Numeric Pad
- Integrated Force Sensing Resistor Pointing Device
- Polycarbonate Case with Mounting Holes
- Designed to Meet NEMA 4X Specifications
- USB and PS/2 Configurations Available

SLK-80-FSR-OEM MILITARY OEM KEYBOARD WITH ADJUSTABLE BACKLIGHTING

- Adjustable backlighting
- Optional NVIS Compliant
- Integrated Force Sensing Resistor Pointing Device
- OEM Kit: PCB, Rubber Overlay and Cable
- Small Footprint Design
- USB and PS/2 Configurations Available

SL-86-911-TP-FL KEYBOARD WITH TOUCHPAD

- Fn Key for Secondary Legend Flexibility
- Integrated Touchpad
- Meets NEMA 4X (IP65) Specifications
- One-Touch Emergency Key
- Red Backlit Keys
- USB and PS/2 Configurations Available

PM-65-TP-SS PANEL MOUNT STAINLESS STEEL WITH TRACKBALL

- Integrated Touchpad
- Integrated, Programmable Function Keys
- Low-Profile Stainless Steel Keys
- Vandal Proof Design
- Panel Mount
- USB Cable Configuration

HP-1330-FSR-OEM INDUSTRIAL FORCE SENSING RESISTOR POINTING DEVICE

- OEM Kit: PCB, Rubber Overlay and Cable
- USB and PS/2 Configurations Available

KYB-18-OEM INDUSTRIAL SILICONE RUBBER NUMERIC KEYPAD

- Numlock Key for Secondary Keyboard
- USB and PS/2 Configurations Available

DU-5K-TB KEYBOARD WITH INTEGRATED TRACKBALL

- Built-In Mounting Holes
- Integrated Trackball
- Optional NVIS Compliant – Green B backlighting
- Meets NEMA 4X (IP65) Specifications
- USB and PS/2 Configurations Available

RDC-5K-FSR RACKDRAWER KEYBOARD WITH FORCE SENSING RESISTOR

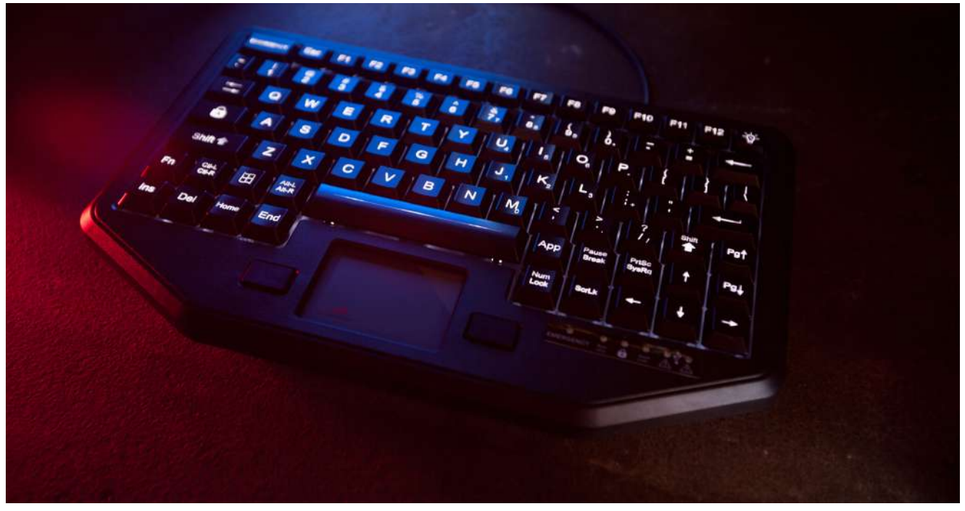
- 10-Key Numeric Pad
- Integrated Force Sensing Resistor Pointing Device
- Slide Load Rating: 130 Lbs/Pair
- Rack Mount
- USB and PS/2 Configurations Available

SLK-101-FL CLEANABLE SEALED MEDICAL KEYBOARD

- 10-Key Numeric Pad
- Cleanable, Liquidproof Design
- Integrated Backlighting
- Low-Profile Keys for Easy Cleaning
- USB Cable Configuration

AK-39 RUGGED WEARABLE KEYBOARD

- Integrated Force Sensing Resistor Pointing Device
- Wearable design
- NumLock Access
- High EMI Standards
- Green Backlight
- Optional NVIS Compliant
- USB Cable Configuration



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SWISSBIT

www.swissbit.com

SWISSBIT, A WORLDWIDE OPERATING LEADING MANUFACTURER OF FLASH STORAGE AND SECURITY SOLUTIONS, WAS CREATED THROUGH A MANAGEMENT BUYOUT FROM SIEMENS SEMICONDUCTOR IN 2001. WITH OVER 25 YEARS OF EXPERIENCE IN THE MEMORY & STORAGE INDUSTRY SWISSBIT HAS BECOME A WORLD-CLASS LEADER IN TECHNOLOGY, SUPPLYING HIGH-QUALITY, HIGH RELIABILITY SOLUTIONS IN ALL ESTABLISHED STORAGE INTERFACES.

2.5" SSD

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
X-600	SATA III	SLC	16 GB – 512 GB	up to 520	up to 425	up to 79,000	up to 76,000
X-66	SATA III	pSLC	16 GB - 480 GB	up to 520	up to 450	up to 80,000	up to 75,000
X-60	SATA III	MLC	30 GB - 960 GB	up to 525	up to 460	up to 74,300	up to 77,900
X-75	SATA III	3D NAND TLC	60 GB - 1920 GB	up to 565	up to 495	up to 73,600	up to 79,400
X-76	SATA III	3D NAND pSLC	10 GB – 320 GB	up to 565	up to 480	up to 77,000	up to 85,000
X-73	SATA III	3D NAND TLC	30 GB – 960 GB	up to 565	up to 495	up to 73,600	up to 79,400
X-70	SATA III	3D NAND TLC	60 GB – 480 GB	up to 560	up to 465	up to 83,500	up to 66,900

Data Care Management · Life time monitoring (LTM) · Power fail protection · Read-only optimized · Secure erase (Sanitize / Purge) / Fast erase · Shock and vibration · Temperature sensor · Trim support · WAF reduction · Wear leveling · Wide temperature support

MSATA SSD

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
X-66m	SATA III	pSLC	4 GB – 240 GB	up to 520	up to 450	up to 80,000	up to 75,00
X-60m	SATA III	MLC	8 GB - 480 GB	up to 520	up to 450	up to 75,00	up to 75,00
X-600m	SATA III	SLC	4 GB – 128 GB	up to 520	up to 405	up to 76,000	up to 73,000
X-76m	SATA III	3D NAND pSLC	10 GB - 320 GB	up to 560	up to 480	up to 74,000	up to 84,900
X-75m	SATA III	3D NAND TLC	30 GB - 960 GB	up to 565	up to 495	up to 73,600	up to 79,400

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M.2 PCIE SSD

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
N-10m2	PCIe 3.1 / NVMe 1.2	3D NAND TLC	120 GB - 960 GB	up to 1,600	up to 1,000	up to 190,000	up to 190,000
N-16m2	PCIe 3.1 / NVMe 1.2	3D NAND pSLC	40 GB - 320 GB	up to 1,620	up to 1,070	up to 195,000	up to 195,000
N-12m2	PCIe 3.1 / NVMe 1.2	3D NAND TLC	30 GB - 240 GB	up to 1,570	up to 860	up to 100,000	up to 166,000
N-18m2	PCIe 3.1 / NVMe 1.2	3D NAND pSLC	10 GB - 80 GB	up to 1,520	up to 860	up to 148,000	up to 166,000
N-20m2	PCIe 3.1 / NVMe 1.3	3D NAND TLC	15 GB - 480 GB	up to 1,750	up to 720	up to 140,000	up to 100,000
N-26m2	PCIe 3.1 / NVMe 1.3	3D NAND pSLC	5 GB - 160 GB	up to 1,750	up to 720	up to 140,000	up to 100,000

Data Care Management · Life time monitoring (LTM) · Power fail protection · Read-only optimized · Secure erase (Sanitize / Purge) / Fast erase · Shock and vibration · Temperature sensor · Trim support · WAF reduction · Wear leveling · Wide temperature support

SLIM SATA SSD

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
X-66s	SATA III	pSLC	16 GB – 240 GB	up to 520	up to 450	up to 80,000	up to 75,00
X-60s	SATA III	MLC	30 GB - 480 GB	up to 520	up to 450	up to 75,00	up to 75,00
X-600s	SATA III	SLC	16 GB – 128 GB	up to 520	up to 405	up to 76,000	up to 73,000
X-76s	SATA III	3D NAND pSLC	10 GB - 320 GB	up to 560	up to 480	up to 74,000	up to 84,900
X-75s	SATA III	3D NAND TLC	30 GB - 960 GB	up to 565	up to 495	up to 73,600	up to 79,400

Data Care Management · Life time monitoring (LTM) · Power fail protection · Read-only optimized · Secure erase (Sanitize / Purge) / Fast erase · Shock and vibration · Temperature sensor · Trim support · WAF reduction · Wear leveling · Wide temperature support

M.2 SATA SSD

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
X-66m2	SATA III	pSLC	16 GB – 240 GB	up to 520	up to 450	up to 80,000	up to 75,00
X-60m2	SATA III	MLC	30 GB - 960 GB	up to 520	up to 450	up to 75,00	up to 75,00
X-600m2	SATA III	SLC	16 GB – 128 GB	up to 520	up to 405	up to 76,000	up to 73,000
X-76m2	SATA III	3D NAND pSLC	10 GB - 320 GB	up to 560	up to 480	up to 74,000	up to 84,900
X-75m2	SATA III	3D NAND TLC	30 GB - 1920 GB	up to 565	up to 495	up to 73,600	up to 79,400
X-86m2	SATA III	3D NAND pSLC	10 GB - 160 GB	up to 373	up to 236	up to 13.1k	up to 8.5k
X-80m2	SATA III	3D NAND TLC	30 GB - 480 GB	up to 360	up to 220	up to 15k	up to 9k

Data Care Management · Life time monitoring (LTM) · Power fail protection · Read-only optimized · Secure erase (Sanitize / Purge) / Fast erase · Shock and vibration · Temperature sensor · Trim support · WAF reduction · Wear leveling · Wide temperature support

E.MMC BGA PACKAGE

	Compliance	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
EM-30	JEDEC e.MMC 5.1	3D TLC	16 GB - 256 GB	up to 300	up to 230	up to 39,500	up to 41,500
EM-36	JEDEC e.MMC 5.1	3D pSLC	5 GB - 80 GB	up to 300	up to 230	up to 39,500	up to 41,500
EM-20	JEDEC e.MMC 5.0	MLC	4 GB - 64 GB	up to 175	up to 21	up to 3,800	up to 1,400
EM-26	JEDEC e.MMC 5.0	pSLC	2 GB - 32 GB	up to 240	up to 120	up to 6,700	up to 6,700

Data Care Management · Life time monitoring (LTM) · Power fail protection · WAF reduction · Wear leveling · Wide temperature support

M.2 PCIE BGA PACKAGE

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
EN-20	PCIe 3.1 / NVMe 1.3	3D NAND TLC	15 GB - 480 GB	up to 1,770	up to 720	up to 140,000	up to 100,000
EN-26	PCIe 3.1 / NVMe 1.3	3D NAND pSLC	5 GB - 160 GB	up to 1,770	up to 720	up to 140,000	up to 100,000

Data Care Management · Life time monitoring (LTM) · Power fail protection · Secure erase (Sanitize / Purge) / Fast erase · Temperature sensor · Trim support · WAF reduction · Wide temperature support

CFEXPRESS CARDS

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
G-20	PCIe 3.1 / NVMe 1.3	3D NAND TLC	15 GB - 480 GB	up to 1,600	up to 680	up to 140,000	up to 100,000
G-26	PCIe 3.1 / NVMe 1.3	3D NAND pSLC	5 GB - 160 GB	up to 1,600	up to 680	up to 140,000	up to 100,000

Data Care Management · Life time monitoring (LTM) · Power fail protection · Read-only optimized · Secure erase (Sanitize / Purge) / Fast erase · Shock and vibration · Temperature sensor · Trim support · WAF reduction · Wear leveling · Wide temperature support

SD MEMORY CARDS

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
S-250	SD 2.0, Class 6	SLC	512 MB - 2 GB	up to 24	up to 13.5	up to 1,580	up to 29
S-455	SD 3.0, Class 10	SLC	512 MB - 32 GB	up to 44	up to 38	up to 1,550	up to 1,300
S-450	SD 3.0, Class 10	SLC	512 MB - 32 GB	up to 88	up to 73	up to 1,430	up to 28
S-46	SD 3.0, Class 10	pSLC	2 GB - 64 GB	up to 46	up to 52	up to 1,440	up to 1,260
S-45	SD 3.0, Class 10	MLC	4 GB - 128 GB	up to 43	up to 21	up to 1,200	up to 950
S-30	SD 6.1, Class 10	3D NAND TLC	32 GB - 256 GB	up to 95	up to 85	up to 1,700	up to 1,050
S-56	SD 6.1, Class 10	3D NAND pSLC	4 GB - 64 GB	up to 94	up to 82	up to 2,050	up to 820
S-50	SD 6.1, Class 10	3D NAND TLC	16 GB - 256 GB	up to 94	up to 37	up to 2,050	up to 1,360

Data Care Management | Life time monitoring (LTM) | Power fail protection | ESD and EMI Safe | Shock and vibration | Longevity | WAF reduction | Wear leveling | Wide temperature support

MICRO SD MEMORY CARDS

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
S-250u	SD 2.0, Class 6	SLC	512 MB - 2 GB	up to 24	up to 11	up to 1,580	up to 29
S-300u	SD 2.0, Class 6	SLC	1 GB - 8 GB	up to 24	up to 22	up to 1,580	up to 29
S-455u	SD 3.0, Class 10	SLC	512 MB - 8 GB	up to 40	up to 28	up to 1,280	up to 1,540
S-450u	SD 3.0, Class 10	SLC	512 MB - 8 GB	up to 30	up to 24	up to 1,200	up to 28
S-46u	SD 3.0, Class 10	pSLC	2 GB - 64 GB	up to 42	up to 40	up to 1,440	up to 1,250
S-45u	SD 3.0, Class 10	MLC	4 GB - 128 GB	up to 44	up to 19	up to 1,350	up to 950
S-30u	SD 6.1, Class 10	3D NAND TLC	32 GB - 256 GB	up to 95	up to 85	up to 1,700	up to 1,050
S-56u	SD 6.1, Class 10	3D NAND pSLC	4 GB - 32 GB	up to 95	up to 84	up to 2,050	up to 920
S-50u	SD 6.1, Class 10	3D NAND TLC	16 GB - 128 GB	up to 91	up to 38	up to 2,010	up to 1,360

Data Care Management | Life time monitoring (LTM) | Power fail protection | ESD and EMI Safe | Shock and vibration | Longevity | Conformal Coating | WAF reduction | Wear leveling | Wide temperature support

USB MODULES

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
U-500	USB 3.1	SLC	4 GB - 32 GB	up to 174	up to 91	up to 2,980	up to 1,060
U-56	USB 3.1	pSLC	4 GB - 32 GB	up to 175	up to 110	up to 3,200	up to 1,100
U-58	USB 3.1	3D pSLC	8 GB - 16 GB	up to 180	up to 76	up to 4,100	up to 1,680
U-450	USB 2.0	SLC	2 GB - 16 GB	up to 36	up to 26	up to 1,900	up to 1,400
U-48	USB 2.0	3D NAND pSLC	8 GB - 16 GB	up to 42	up to 38	up to 2,600	up to 2,000
U-400	USB 2.0	SLC	1 GB - 16 GB	up to 37	up to 26	up to 1,600	up to 30
U-46	USB 2.0	pSLC	2 GB - 16 GB	up to 40	up to 29	up to 2,100	up to 900
U-45	USB 2.0	MLC	4 GB - 32 GB	up to 32	up to 23	up to 650	up to 650
U-110	USB 2.0	SLC	1 GB - 16 GB	up to 32	up to 23	up to 1,600	up to 30

Data Care Management | Life time monitoring (LTM) | Power fail protection | Shock and vibration | Longevity | WAF reduction | Wear leveling | Wide temperature support

SILICON POWER

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WITH OVER 16 YEARS OF EXPERIENCE, SILICON POWER HAS BECOME A TRUSTED SERVICE-DRIVEN PROVIDER OF PROFESSIONAL NAND FLASH STORAGE AND DRAM MODULES FOR INDUSTRIAL AND ENTERPRISE APPLICATIONS.

DDR4 DRAM MODULES

Model	SODIMM	UDIMM	ECC SODIMM	ECC UDIMM	ECC RDIMM
DRAM Type	DDR4	DDR4	DDR4	DDR4	DDR4
Capacity	2GB, 4GB, 8GB, 16GB, 32GB	4GB, 8GB, 16GB, 32GB	4GB, 8GB, 16GB, 32GB	4GB, 8GB, 16GB, 32GB	4GB, 8GB, 16GB
Data Rate	2400 / 2600 MHz	2400 / 2600 MHz	2400 / 2600 MHz	2400 / 2600 MHz	2400 / 2600 MHz
CAS Latency	CL17 / CL19	CL17 / CL19	CL17 / CL19	CL17 / CL19	CL17 / CL19
Voltage	1.2V	1.2V	1.2V	1.2V	1.2V
Pin Count	260 Pin	288 Pin	260 Pin	288 Pin	288 Pin
Data Width	64Bits	64Bits	72Bits	72Bits	72Bits
PCB Heigth	30.13 mm	31.40 mm	30.13 mm	31.40 mm	31.40 mm
Standard 0~85°C	Supported	Supported	Supported	Supported	Supported
Industrial -40~85°C	Supported	Supported	Supported	Supported	Supported
Storage -55~95C	Supported	Supported	Supported	Supported	Supported

DDR3 DRAM MODULES

Model	SODIMM	UDIMM	ECC SODIMM	ECC UDIMM	ECC RDIMM
DRAM Type	DDR3L	DDR3L	DDR3L	DDR3L	DDR3L
Capacity	2GB, 4GB, 8GB	2GB, 4GB, 8GB	4GB, 8GB	4GB, 8GB	8GB
Data Rate	1600 MHz	1600 MHz	1600 MHz	1600 MHz	1600 MHz
CAS Latency	CL 11	CL 11	CL 11	CL 11	CL 11
Voltage	1.35V	1.35V	1.35V	1.35V	1.35V
Pin Count	204 Pin	240 Pin	204 Pin	240 Pin	240 Pin
Data Width	64Bits	64Bits	72Bits	72Bits	72Bits
PCB Heigth	30.50 mm	30.50 mm	30.50 mm	30.50 mm	30.50 mm
Standard 0~85°C	Supported	Supported	Supported	Supported	Supported
Industrial -40~85°C	Supported	Supported	Supported	Supported	Supported
Storage -55~95°C	Supported	Supported	Supported	Supported	Supported

SSDS





Form Factor	M.2	M.2	2.5''	2.5''	mSATA
Interface	PCIe Gen3, NVMe	SATA III	SATA III	IDE / PATA	SATA III
Capacity	64 GB - 2 TB	8 GB - 1 TB	8 GB - 4 TB	128 MB - 128 GB	8 GB - 1 TB
Supported Flash Types	3D TLC	SLC, MLC, 3D TLC	SLC, MLC, 3D TLC	SLC, MLC	SLC, MLC, 3D TLC
Industrial -40~85°C	Supported	Supported	Supported	Supported	Supported

FLASH CARDS




Form Factor	CFExpress	Compact Flash	SD	micro SD
Interface	Cfast 2.0	CF 6.0	SD 3.0	SD 3.0
Capacity	4 GB - 512 GB	128 MB - 256 GB	256 MB - 256 GB	256 MB - 256 GB
Supported Flash Types	SLC, MLC, 3D TLC	SLC, MLC	SLC, MLC, 3D TLC	SLC, MLC, 3D TLC
Industrial -40~85°C	Supported	Supported	Supported	Supported





SENSONOR

www.sensonor.com

SENSONOR DESIGNS AND MANUFACTURES HIGH-PRECISION TACTICAL GRADE GYRO SENSORS, GYRO MODULES AND IMUS FOR DEMANDING APPLICATIONS. THE COMPANY SERVES A GLOBAL CUSTOMER BASE IN THE DEFENSE, INDUSTRIAL, AEROSPACE AND COMMERCIAL MARKETS WITH ITAR-FREE SOLUTIONS UTILIZED IN A WIDE RANGE OF APPLICATIONS.

Sensonor operates its own wafer fabrication facility for production of the key sensor components in its products. Assembly, test and calibration are all in-house processes to secure the product performance.
The tight integration between sensor fabrication, testing and assembly is what puts the company in a position to offer the highest performing sensors in the market.
Sensonor is a global leader in MEMS technology and has more than 30 years of experience developing and manufacturing reliable sensor solutions for demanding applications involving high vibration, high shock and harsh environments.

STIM210

STIM210 is a small, tactical grade, affordable, robust and reliable, ultra high performance (Bias Stability 0.3°/h, ARW 0.15°/√h) MEMS gyro module with up to 3 axes. An integrated 32-bit microcontroller enables flexible user configuration. Electronic axis alignment is standard.

- Miniature package
- ITAR free
- Excellent performance in vibration and shock
- Excellent environmental robustness
- 1, 2 or 3 axes offered in same package
- Electronically calibrated axis alignment
- RS422 interface
- 24 bits resolution
- Single-crystal silicon technology
- Low bias drift
- Low noise
- 5 different sampling rates available
- 5 different bandwidths available
- LP filter -3dB frequency can be set individually for each axis
- RS422 protocol, bit rate and line termination
- Selectable output unit: angular rate [deg/s] or incremental angle [deg]
- Continuous self-diagnostics.

STIM300

STIM300 is a small, tactical grade, low weight, high performance non-GPS aided Inertial Measurement Unit (IMU). It contains 3 highly accurate MEMS gyros, 3 high stability accelerometers and 3 inclinometers. The IMU is factory calibrated and compensated over its entire operating temperature range.

STIM300 is a cost-effective ITAR free solution for systems that only had FOGs as an alternative when reaching for the performance level of that STIM300 can offer.

- Weight: <0,12 lbs (<55g)
- Volume: <2,2 cu. in. (35cm3)
- ITAR free
- Insensitive to magnetic fields
- Solid state - high reliability
- Low gyro bias instability (0.3°/h)
- Continuous self-diagnostics
- Low gyro noise (0.15°/√h)
- ±10g acceleration input range
- Low accelerometer bias instability (0.05mg)
- 3 inclinometers for accurate leveling
- Compensated digital output, RS422
- Customer configurable output format, sampling rate and filter settings.

STIM318

STIM318 is a small, tactical grade, low weight, high performance non-GPS aided Inertial Measurement Unit (IMU) with greatly improved accelerometer performance. It contains 3 highly accurate MEMS gyros and 3 ultra-high stability accelerometers. The IMU is factory calibrated and compensated for temperature effects over its entire operating temperature range.

STIM318 is a cost-effective ITAR free solution for systems that only had FOGs as an alternative when reaching for the performance level of that STIM318 can offer.

- ITAR free
- Low gyro bias instability (0.3°/h)
- Low gyro noise (0.15°/√h)
- Low accelerometer bias instability (0.003mg)
- Low accelerometer noise (0.015 m/s/√h)
- ±10g acceleration input range
- User programmable bias trim offset
- Customer configurable output format, sampling rate and filter settings
- Compensated digital output, RS422
- Continuous self-diagnostics
- Solid state - high reliability
- Insensitive to magnetic fields
- Weight: <0,13 lbs (<57g)
- Volume: <2,2 cu. in. (35cm3)

PERFORMANCE			SENSONOR STIM300	SENSONOR STIM318	SENSONOR STIM320
Parameter - Gyro	**Conditions**	**Units**	**IMU**	**IMU**	**IMU**
Input Rate (maximum)	Cut off 20% above	°/s	± 400, ± 1200, ± 2000,	± 400, ± 1200, ± 2000,	± 400
Resolution		bits	24	24	24
Scale factor accuracy		ppm	500	500	500
Bandwidth (-3dB)		Hz	262	262	262
Sample rate	Max	Sample/s	2000	2000	2000
Group Delay	LP-filter -3bB=262Hz	ms	1.5	1.5	1.5
	LP-filter -3bB=131Hz	ms	3.0	3.0	3.0
	LP-filter -3bB=66Hz	ms	6.0	6.0	6.0
	LP-filter -3bB=33Hz	ms	12	12	12
	LP-filter -3bB=16Hz	ms	24	24	24
Bias Range		°/h	± 250	± 250	± 250
Bias Trim Offset Range		°/s	NA	± 1	± 1
Bia Run-Run		°/h	4	4	4
Drift Rate Stability		°/h	3	3	3
Bias error over temperature	Static temperatures	°/h	≤ 9	≤ 9	≤ 9
Bias error over temperature gradients	≤ 1 °C/min	°/h	≤ 10	≤ 10	≤ 10
Bias Instability	Allan variance @25°C	°/h	≤ 0.3	≤ 0.3	≤ 0.3
Angle Random Walk (ARW)	Allan variance @25°C	°/√h	0.15	0.15	0.1
Non-Linearity	± 200°/s	ppm	15	≤ 15-20	≤ 15-20
	± 400°/s	ppm	20		
Linear Acceleraton Effect Bias	With g-compensation	°/h/g	1	1	1
	No g-compensation	°/h/g	7	7	7
Linear Acceleraton Effect SF	With g-compensation	ppm/g	50	50	50
	No g-compensation	ppm/g	400	400	400
Orthogonality		± mrad	± 0,2	± 0,2	± 0,2
Misalignment		± mrad	± 1	± 1	± 1
Parameter - Accelerometers		**Technology**	**MEMS**	**MEMS**	**MEMS**
Fullscale		± g	±5/±10/±30/± 80,	±5/±10/±30/± 80,	±10/
Resolution		Bits	24	24	24
		ug	1,0/1,9/3,8/15,3	1,0/1,9/3,8/15,3	1,9
Scale Factor Accuracy		ppm	200/200/300/1000	200/200/300/1000	200
Scale Factor 1 year Stability		ppm	300	600	600
Non-linearity		ppm	100/100/100/1000	100/100/100/1000	100
Bandwidth (-3dB)		Hz	214/214/257/214	208/262/257/261	262
Sample Rate	Max	Samples/s	2000	2000	2000
Group Delay	LP-filter -3bB=262Hz	ms	6,5/6,5/6,5/6,5	3,1/3/2,8/2,7	3
	LP-filter -3bB=131Hz	ms	8/8/8/8	4,6/4,5/4,3/4,2	4,5
	LP-filter -3bB=66Hz	ms	11/11/11/11	7,6/7,5/7,3/7,2	7,5
	LP-filter -3bB=33Hz	ms	17/17/17/13	14/13/13/13	13
	LP-filter -3bB=16Hz	ms	29/29/29/29	26/25/25/25	25
Bias 1 Year Stability		mg	0,8/1,5/4,5/15	1,5/1,5/4/12	1,5
Bias 1 Year Stability, STIM318e		mg		0,6/1,2/4/12	1,2
Bias Trim Offset Range		mg	NA	50/100/300/1000	100
Bias Error Over Temperature	≤ 1 °C/min	mg rms	1/2/6/20	0,5/0,7/1,5/5	0,7
Bias Instability	Allan variance @25°C	mg	0,03/0,05/0,15/0,5	0,002/0,003/0,01/0,03	0,003
Velocity Random Walk	Allan variance @25°C	m/s/√H	0,04/0,07/0,21/0,7	0,008/0,015/0,04/0,15	0,015
Orthogonality		± mrad	±0,2/0,2/0,6/1	±0,2/0,2/0,2/0,6	±0,2
Misalignment		± mrad	±1/1/1/1,5	±1/1/1/1,5	±1
Electrical / Mechanical					
Data Interface		Digital	RS-422	RS-422	RS-422
Initialization Time (valid data)		secs	≤ 1	≤ 1	≤ 5
Dimensions (max)		mm	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5	44.8 x 38.6 x 21.5
Weight (max)		g	55	57	57
Power Consumption		Watts	≤ 2	≤ 2	≤ 2
Input Voltage		+VDC	+5 ± 10%	+5 ± 10%	+5 ± 10%
PPS input		kbps	No	No	Yes
Environment					
Temperature Operating		°C	-40 to +85	-40 to +85	-40 to +85
Shock Operating		g	--	--	--
Vibration Operating		g	8 grms 20-2000 Hz	8 grms 20-2000 Hz	8 grms 20-2000 Hz
Shock Survival		g	1500 g, 0.5 msec	1500 g, 0.5 msec	1500 g, 0.5 msec

STIM277H

STIM277H is a small, tactical grade, affordable, robust and reliable, ultra high performance (Bias Stability 0.3°/h, ARW 0.15°/√h) 3 axis MEMS gyro module built into a hermetic package. The package is a hermetic aluminum enclosure with a glass-to-metal sealed electrical micro-d connector and a laser-welded lid to secure long-term hermetic operation. All parts are tested for fine and gross leak to conform to MIL-STD-883J, Class H.

An integrated 32-bit microcontroller enables flexible user configuration. Electronic axis alignment is standard.

- Hermetic package
- SurTec 650 surface treated
- ITAR free
- Excellent performance in vibration and shock
- Excellent environmental robustness
- Electronically calibrated axis alignment
- RS422 interface
- 24 bits resolution
- Single-crystal silicon technology
- Low bias drift
- Low noise
- 5 different sampling rates available
- 5 different bandwidths available
- LP filter -3dB frequency can be set individually for each axis
- RS422 protocol, bit rate and line termination
- Selectable output unit: angular rate [deg/s] or incremental angle [deg]
- Continuous self-diagnostics.

STIM377H

STIM377H is a small, tactical grade, low weight, high performance non-GPS aided Inertial Measurement Unit (IMU) in a hermetic package. The package is a hermetic aluminum enclosure with a glass-to-metal sealed electrical micro-d connector and a laser-welded lid to secure long-term hermetic operation. All parts are tested for fine and gross leak to conform to MIL-STD-883J, Class H.

STIM377H contains 3 highly accurate MEMS gyros, 3 high stability accelerometers and 3 inclinometers. The IMU is factory calibrated and compensated over its entire operating temperature range.

STIM377H is a cost-effective ITAR free solution for systems that only had FOGs as an alternative when reaching for the performance level of that STIM377H can offer.

- Hermetic package
- Weight: <0,12 lbs (<55g)
- Volume: <2,2 cu. in. (35cm3)
- ITAR free
- Insensitive to magnetic fields
- Solid state - high reliability
- Low gyro bias instability (0.3°/h)
- Continuous self-diagnostics
- Low gyro noise (0.15°/√h)
- ±10g acceleration input range
- Low accelerometer bias instability (0.05mg)
- 3 inclinometers for accurate leveling
- Compensated digital output, RS422
- Customer configurable output format, sampling rate and filter settings

XSENS

www.xsens.com

XSENS IS THE LEADING INNOVATOR IN 3D MOTION TRACKING TECHNOLOGY AND PRODUCTS. OUR SENSOR FUSION TECHNOLOGIES ENABLE A SEAMLESS INTERACTION BETWEEN THE PHYSICAL AND THE DIGITAL WORLD IN CONSUMER ELECTRONICS DEVICES AND PROFESSIONAL APPLICATIONS SUCH AS MOTION CAPTURE, MOTION ANALYSIS, HEALTHCARE, SPORTS AND INDUSTRIAL APPLICATIONS.

MTI-1 SERIES

- Always best-in-class inertial sensors incorporated
- Industry-leading signal processing pipeline and orientation algorithm
- Uniform software/hardware interface over product lifetime (no EOL)
- API-compatible with all Xsens Motion Trackers

MTi-7

- Best performing GNSS-aided AHRS
- Complete GNSS/INS module using existing GNSS infrastructure
- Miniature and lightweight SMD form factor with low power consumption
- Fully temperature calibrated module

MTI-600 SERIES

- Fully supported by the MT Software Suite (free use), enabling our customers a faster time to market
- Small footprint, flexible mounting options
- Industrial grade accuracy & reliability at affordable pricing, 100% calibrated and tested
- Rich interface platform, incl. CAN bus support
- External and internal GNSS receiver support
- Advanced proprietary XKF3 core sensor fusion algorithms
- State-Of-The-Art hardware components
- Extensive technical support
- RTK Solution
- ITAR-free

MTI 100 SERIES

- Highest performance with resistance to magnetic distortions
- Vibration-rejecting gyroscopes and accelerometers
- Configurable output settings, synchronizes with any 3rd party device

MTI-G-710

- All-in-one sensor system with high-frequency position and orientation output
- Excellent heading tracking without requiring a magnetic field
- Configurable output settings, synchronizes with any 3rd party device

	ROLL/PITCH STATIC	ROLL/PITCH DYNAMIC	YAW	SENSOR FUSION CORE	POSITION & VELOCITY
MTi 1-series					
MTi-1 IMU	-	-	-	-	-
MTi-2 VRU	0.5°	0.8°	AHS	XKF	-
MTi-3 AHRS	0.5°	0.8°	2.0°	XKF	-
MTi-7 GNSS/INS	0.5°	0.5°	1.5°	XKF	1 m | 0.05 m/s
MTi 600-series					
MTi-610 IMU	-	-	-	-	-
MTi-620 VRU	0.2°	0.5°	AHS	XKF	-
MTi-630 AHRS	0.2°	0.5°	1.0°	XKF	-
MTi-670 GNSS/INS	0.2°	0.5°	1.0°	XKF	1m | 0.05m/s
MTi-680G RTK-GNSS/INS	0.2°	0.5°	1.0°	XKF	0.05m / 0.05m/s
MTi 10-series					
MTi-30 AHRS	0.2°	0.5°	1.0°	XKF	-
MTi 100-series					
MTi-100 IMU	-	-	-	-	-
MTi-200 VRU	0.2°	0.3°	AHS	XEE	-
MTi-300 AHRS	0.2°	0.3°	1.0°	XEE	-
MTi-G-710 GNSS/INS	0.2°	0.3°	0.8°	XEE	1 m | 0.05 m/s

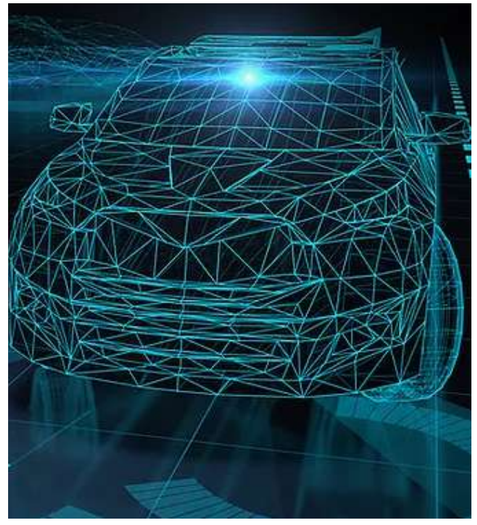
Applications

POLYEXPLORE

POLYEXPLORE

www.polyexplore.com

POLYEXPLORE INC. IS A LEADING DEVELOPER OF INERTIAL NAVIGATION SOLUTIONS. OUR INNOVATIVE SENSORS ARE IDEAL FOR DEMANDING UNMANNED SYSTEMS APPLICATIONS SUCH AS UAVS (UNMANNED AERIAL VEHICLES) AND UGVS (UNMANNED GROUND VEHICLES), AS WELL AS THE NEXT GENERATION OF HIGH-PERFORMANCE AUTONOMOUS DRIVING SYSTEMS.



MEMS RTK GNSS/INS POLYNAV 2000H/P

High accuracy position, velocity, acceleration, attitude, heading, angular rate and heave
GPS, GLONASS, Beidou, Galileo and SBAS
Dual frequency (L1 & L2) RTK
Dual antenna for accurate heading
Best in class price-performance ratio
100 Hz navigation solution and the raw measurement output
Accurate attitude/heading whether the platform is static or moving
Tactical grade IMU sensors
Multiple sensor fusion
ROS driver ready
Heave message

"ULTRA" GNSS/INS POLYNAV 2000S

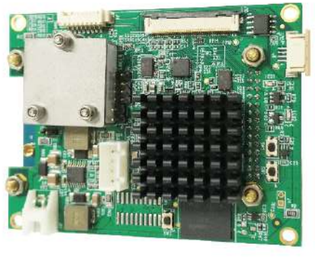
- Centimeter level positioning with precise attitude and heading whether the platform is static or moving
- Precision velocity, acceleration, attitude (Roll, pitch, heading), and angular rate
- GPS, GLONASS, Beidou, Galileo*, and SBAS, QZSS; 240 Tracking Channels
- Dual frequency (L1 & L2) RTK
- Global PPP
- Dual antenna for accurate heading
- Best in class price-performance ratio
- 100 Hz navigation solution and the raw measurement output
- Tactical grade, near FOG performing solid-state IMU sensor
- Multiple sensor fusion
- ROS driver ready
- Heave message
- IP67 environmental rating

FOG INERTIAL NAVIGATION SYSTEM POLYNAV 2000F

- High accuracy position, velocity, acceleration, attitude, heading, angular rate and heave
- GPS, GLONASS, Beidou, Galileo and SBAS
- Dual frequency (L1 & L2) RTK
- Dual Antenna for accurate heading
- Best in class price-performance ratio
- 100 Hz navigation solution and the raw measurement output
- Accurate attitude/heading whether the platform is static or moving
- Fiber Optic Gyroscope (FOG)
- Multiple sensor fusion
- ROS driver ready
- Heave message

RTK GNSS/INS POLYNAV 2000P OEM

- High accuracy position, velocity, acceleration, attitude (Roll, pitch, heading), angular rate
- GPS, GLONASS, Beidou, Galileo and SBAS
- Dual frequency (L1 & L2) RTK
- Dual antenna for accurate heading
- Best in class in size and price-performance ratio
- 100 Hz navigation solution and the raw measurement output
- Accurate attitude/heading whether the platform is static or moving
- Tactical grade IMU sensors
- Multiple sensor fusion
- ROS driver ready
- Heave message



	POLYNAV 2000S	POLYNAV 2000P OEM	POLYNAV 2000P	POLYNAV 2000H	POLYNAV 2000F	POLYNAV 2000F1
GNSS						
Constellation	GPS/GLONASS/ BeiDou/Galileo/ SBASS/QZSS	GPS/GLONASS/ Beidou/Galileo	GPS/GLONASS/ Beidou/Galileo	GPS/GLONASS/ Beidou/Galileo	GPS/GLONASS/ Beidou/Galileo	GPS/GLONASS/ Beidou/Galileo
Satellite signals	L1 & L2C/L2P (GPS), E1&E5b (Galileo)	L1 & L2	L1 & L2	L1 & L2	L1 & L2	L1 & L2
Position accuracy (RTK)	1.6 m CEP SPS	1.6 m CEP SPS	1.6 m CEP SPS,	1.6 m CEP SPS	1.6 m CEP SPS	1.6 m CEP SPS
	0.02 m RTK	0.02 m RTK	0.02 m RTK	0.02 m RTK	0.02 m RTK	0.02 m RTK
Velocity Accuracy (RTK)	1 cm/s	1 cm/s	1 cm/s	1 cm/s	1 cm/s	1 cm/s
Roll/Pitch	0.015°	0.05°	0.005° (H), 0.01°(P)	0.005° (H), 0.01°(P)	0.05°	0.05°
Heading	0.08° (1 m base)	0.1°	0.1° (1 m base),	0.1° (1 m base)	"0.01° (5 m base) 0.08° per 1 meter of baseline length"	"0.01° (5 m base) 0.08° per 1 meter of baseline length"
Measurement rate	100 Hz	100 Hz (up to 400Hz)	100 Hz	100 Hz	100 Hz	100 Hz
Sensitivity	-160 dBm	-160dBm	-160 dBm	-160 dBm	-160 dBm	-160 dBm
Number of antennas	2	2	2	2	2	2
Inputs/comm	"Ethernet, UART, RS232, CAN, DMI, PPS, Event Input"		Ethernet, CAN, 2 Serial Ports, Odometer	Ethernet, CAN, 2 Serial Ports, Odometer	Ethernet, CAN, 2 Serial Ports, Odometer	Ethernet, CAN, 2 Serial Ports, Odometer
TIME TO FIRST FIX (TTFF)						
Cold start	< 60 s	< 60 s	< 60 s	< 60 s	< 60 s	< 60 s
Warm Start	< 45 s	< 45 s	< 45 s	< 45 s	< 45 s	< 45 s
Hot Start	< 11 s	< 11 s	< 11 s	< 11 s	< 11 s	< 11 s
Re-acquisition	< 2 s	< 2 s	< 2 s	< 2 s	< 2 s	< 2 s
INERTIAL SENSORS						
Gyro Dynamic Range	400°/s	±125°/s	±125°/s	125 °/s	490°/s	490°/s
Gyro Bias Instability	0.3 °/h	2°/h	2°/h	0.8 °/hr	0.1 °/h	0.05 °/h
Gyro Random Walk	0.015°/√h	0.15°/√h	0.15°/√h	0.09°/√hr	0.017°/√h	0.012°/√h
Accelerometer Dynamic Range	10g	±8g	±8g	8 g	10g	10g
Accelerometer Bias Instability	0.03 ug	3.6ug	3.6ug	3.2 ug	0.1mg	0.01mg
Accelerometer Random Walk	0.015 m/s/√h	0.012m/s/√h	0.012m/s/√h	0.008 m/s/√hr	0.07m/s/√h	0.014m/s/√h
MECHANICAL						
Dimension	166 x 134 x 70 mm	80 x 60 x 22 mm	147 x 99 x 48 mm	147 x 99 x 48 mm	177 x 115 x 109 mm	177 x 115 x 109 mm
Weight	approx. 800 g.	13 g	500 g	500 g	1455 g (without antennas)	1455 g (without antennas)
ENVIRONMENTAL						
Operating temperature	-40° to 85° C	-40° to 85° C	-40° to 85° C	-40° to 85° C	-40° to 65° C	-40° to 65° C
Shock					Operating, 9 g, 11 msec, sawtooth	Operating, 9 g, 11 msec, sawtooth
Vibration					Operating 8 g rms, 20-2000 Hz random	Operating 8 g rms, 20-2000 Hz random
ELECTRICAL						
Input voltage	12–24 V DC	12–24 V DC	12–24 V DC	12–24 V DC	12–28 V DC	12–28 V DC
Power consumption	10W	5W	5W	5W	10 W	10 W

MEMSCAP
www.memscap.com

THE MEMSCAP PRESSURE TRANSDUCERS DO SUSTAIN THE HIGH ENVIRONMENTAL STRESSES OF HARSH ENVIRONMENTS (TEMPERATURE, SHOCK, VIBRATION, …) AND PROVIDE WITH EXCELLENT PRECISION, LONG TERM STABILITY AND RELIABILITY.

Based on Safran Colibrys' 25-year bulk MEMS development and production expertise, MEMS sensors are designed for accuracy and long term reliability. Our design and production facilities are based in Switzerland. More than a manufacturer of high-end sensors, Safran Colibrys is a proven partner for those, who demand high-tech marvels with reliable supply and quality.

MEMSCAP®, the high added value MEMS leader, provides innovative products and solutions based on Micro-Electro-Mechanical Systems as well as MEMS contract manufacturing services. MEMSCAP® mainly addresses 4 market segments: aerospace/defense, optical communications, medical and biomedical, and the IT/consumer market.

SP82 Absolute / Differential / Relative Pressure Sensor

Ultra low long term drift with typical drift values much below 0.02% of Full Scale Output More than 20 years Mean Time Before Failure (MTBF) value.

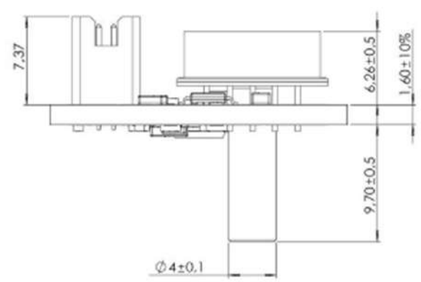
The basic pressure sensing element of the SP82 is a monolithic silicon chip with a cavity etched out to form a diaphragm, which top side contains implanted piezoresitive elements forming a Wheatstone bridge.

TP1200

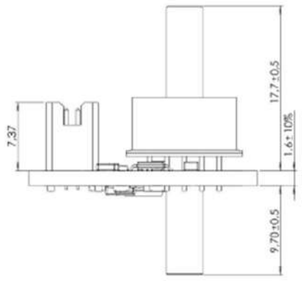
The MEMSCAP® TP1000 series digital-output pressure transducer is a fully calibrated, high precision device.

The TP1000 contains a MEMSCAP® SP82 sensor, Analog to Digital Converter (ADC) and Electrically Erasable Programmable Read-Only Memory (EEPROM) with compensation data.

Temperature and non-linearity effects need to be externally compensated for by using data stored in the EEPROM.

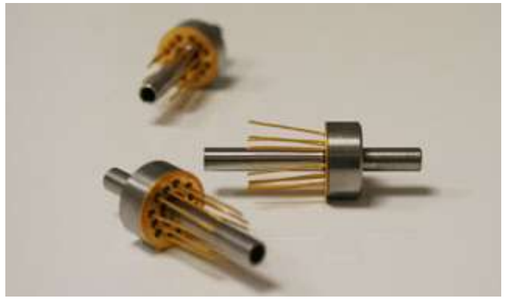


Mechanical dimensions TP1200 absolute transducer in side view (mm)



Mechanical dimensions TP1200 differential transducer in side view (mm)

ABSOLUTE PRESSURE	MEMSCAP PART NUMBER	
Parameter	32074	32073
Part name	TP1200 001A 00	TP1200 002A 00
Pressure range [mBar]	35 to 1200	35 to 2600
Total pressure error [mBar]	±0.3	±0.6
Total pressure error [mBar] for temperature range -50°C to -55°C	±0.4	±0.7
Long term stability (at ambient temperature) [mBar/5years]	±0.5	±1.0
Calibration temperature range [°C]	-55 to +85	-55 to +85
Storage temperature [°C]	-55 to +85	-55 to +85
Electrical interface	Samtec TFM-105-11-S-D	Samtec TFM-105-11-S-D



DIFFERENTIAL PRESSURE	MEMSCAP PART NUMBER		
Parameter	32072	32071	32127
Part name	TP1200 00D5 00	TP1200 001D 00	TP1200 002D 00
Pressure range [mBar]	0 - 500	0 – 1000	-10 - 1500
Total pressure error [mBar]	±0.3	±0.6	±0.37
Total pressure error [mBar] for temperature range -50°C to -55°C	±0.4	±0.7	±0.5
Long term stability (at ambient temperature) [mBar/5years]	±0.5	±1.0	±2.0
Calibration temperature range [°C]	-55 to +85	-55 to +85	-55 to +85
Storage temperature [°C]	-55 to +85	-55 to +85	-55 to +85
Electrical interface	Samtec TFM-105-11-S-D	Samtec TFM-105-11-S-D	Samtec TFM-105-11-S-D

MPE

www.mpe.co.uk

FORMED IN 1925, MPE HAVE THE LONGEST STANDING AND PROVEN HERITAGE OF DESIGN, DEVELOPMENT AND MANUFACTURE OF HIGH PERFORMANCE EMC/EMP FILTERS AND CAPACITORS WITHIN THE INDUSTRY.

Throughout this heritage, MPE have gained a reputation for providing the highest levels of quality and reliability and this legacy now ensures that MPE, are able to offer an unparalleled range of solutions to the market place.

FEEDTHROUGS	RATED VOLTAGE	RATED CURRENT	70-90 dB INSERTION LOSS from
AC FEEDTHROUGS	115V AC 400Hz, or 250V AC 50/60Hz, or 600V DC	10 A-500 A	100 KHz
DC FEEDTHROUGS	30 VDC- 400 VDC	10A -100 A	100 KHz
POWER LINE FILTERS	**RATED VOLTAGE**	**RATED CURRENT**	**100 dB INSERTION LOSS from**
Single Line DC (Tubular Cases)	250VDC	6 - 200A	80kHz /200kHz/ 500kHz
Single Line DC (Rectangular Cases)	250VDC	6- 200A	10kHz
Two Line DC	250VDC	6- 200A	10kHz
Single Line AC (Tubular Cases)	250VDC	6- 200A	350kHz /900kHz/ 2MHz
Single Line AC (Rectangular Cases)	250VDC	6- 200A	14kHz
Standard Range (SP&N and TP&N)	250/440VAC	6 - 1200A	10kHz /50kHz /100kHz
Extended Performance (SP&N and TP&N)	250/440VAC	6 - 400A	10kHz
Low Leakage (SP&N and TP&N)	250/440VAC	6- 400A	50kHz /100kHz
Low Leakage Extended Performance (SP&N and TP&N)	250/440VAC	6- 400A	10kHz
Two Phase Range	250/440VAC	6- 400A	50kHz /100kHz
400Hz Range (SP&N and TP&N)	115/200VAC	6 - 200A	100kHz
Very High Current (TP&N)	250/440VAC	800 - 2400A	10kHz 100kHz
LOW LEAKAGE TEMPEST POWER LINE FILTER	440/250 , 50/60 Hz	2, 3 or 4 line filters with 16A – 125A current	10 MHz

TEMPEST PLUGGABLE FILTERS	RATED VOLTAGE	RATED CURRENT	60 dB INSERTION LOSS from
SINGLE OUTLET	250VAC 50/60Hz	6A/ 16A	100 kHz
DUAL OUTLET	250VAC 50/60Hz	6A/ 16A/32A	101 kHz
QUAD OUTLET	250VAC 50/60Hz	16A/32A	102 kHz
IN-LINE	250VAC 50/60Hz	6A/ 16A/32A	103 kHz

HIGH PERFORMANCE EQUIPMENT FILTERS	RATED VOLTAGE	RATED CURRENT	80-100 dB INSERTION LOSS from
General Purpose DC	100V DC	1A - 15A	200 kHz
General Purpose AC	250V AC 50/60Hz, 250V DC	1A - 15A	400 kHz
SMPS	250V AC 50/60Hz, 250V DC	1A - 15A	400 kHz
High Current 1 Phase	250V AC 50/60Hz, 250V DC	30A -100A	300 kHz
High Current 3 Phase	440/250V AC 50/60Hz	30A -100A	301 kHz

SYNQOR
www.synqor.com

SYNQOR® IS A LEADING SUPPLIER OF POWER CONVERSION SOLUTIONS TO THE MILITARY, INDUSTRIAL, TRANSPORTATION, TELECOM/ DATACOM AND MEDICAL MARKETS. SYNQOR'S INNOVATIVE PRODUCTS ARE DESIGNED TO EXCEED THE DEMANDING PERFORMANCE, QUALITY, AND RELIABILITY REQUIREMENTS OF TODAY'S POWER ELECTRONIC ENGINEERS AND SYSTEM INTEGRATORS WHO DEVELOP LEADING-EDGE INFRASTRUCTURE HARDWARE.

We offer all of the power conversion modules needed to build a power system, and we also manufacture complete, cutting edge power systems. Our capabilities include both standard and custom solutions, and we deliver them with industry leading service and support. SynQor's total commitment to quality, customer satisfaction and continuous improvement drives our business processes.

Specification Compliance

MCOTS series converters (with an MCOTS filter) are designed to meet:

- Temperature cycling per MIL-STD-883, Method 1010,
- MIL-HDBK-704 (A-F) Condition B, 10 cycles
- RTCA/DO-160E Section 16
- MIL-STD-1275 (B,D)
- DEF-STAN 61-5 (Part 6)/(5 or 6)
- MIL-STD-461 (C, D, E, F)
- Burn-In at 100 °C baseplate temperature
- Available with S-Grade or M-Grade screening.

FAMILY	PRODUCT	INPUT VOLTAGE RANGE (TRANSIENT)	MAX POWER	EFFICIENCY
MCOTS-28	ISOLATED DC-DC CONVERTER	16-40 VDC (50 VDC)	510 W	Up to %95
MCOTS-28E	ISOLATED DC-DC CONVERTER	16-70 VDC (100 VDC)	400 W	Up to %95
MCOTS-28V	ISOLATED DC-DC CONVERTER	9-40 VDC (55 VDC)	250 W	Up to %91
MCOTS-28VE	ISOLATED DC-DC CONVERTER	9-70VDC (100VDC)	250 W	Up to %92
MCOTS-48	ISOLATED DC-DC CONVERTER	34-75VDC (100 VDC)	600 W	Up to %95
MCOTS-150	ISOLATED DC-DC CONVERTER	90-210VDC (250 VDC)	150 W	Up to %90
MCOTS-270	ISOLATED DC-DC CONVERTER	155-425VDC (475VDC)	600 W	Up to %91
MCOTS-270H	ISOLATED DC-DC CONVERTER	240-425VDC (475VDC)	800 W	Up to %92
MCOTS-270N	ISOLATED DC-DC CONVERTER	240-280 VDC (350VDC)	400 W	Up to %89
MCOTS-28V	NON-ISOLATED DC-DC CONVERTER	9-60 VDC	2000 W	Up to %96
MCOTS-28VE	NON-ISOLATED DC-DC CONVERTER	9-90 VDC	2000 W	Up to %97

INDUSTRIAL SOLUTIONS

Operational Features

- High efficiency up to 95%
- Input voltage ranges from 9 V to 425 V
- Output power up to 600 W
- Fixed frequency switching, low output noise
- No minimum load requirement
- Full Feature option on some models
- Industry standard pin-out configurations and standard footprints
- Operating Temperature -40°C to +100°C
- Output Voltage Set Point ±1.0%
- Output Voltage Ripple <1% of Vout (typ.) pk-pk
- Isolation Voltage Up to 4250 Vdc

FAMILY	PRODUCT	INPUT VOLTAGE RANGE (TRANSIENT)	MAX POWER	EFFICIENCY
IQ12	ISOLATED DC-DC CONVERTER	9-22VDC (25VDC)	185 W	Up to %92
IQ18	ISOLATED DC-DC CONVERTER	9-36VDC (40VDC)	182 W	Up to %92
IQ24	ISOLATED DC-DC CONVERTER	18-36VDC (50VDC)	510 W	Up to %95
IQ32	ISOLATED DC-DC CONVERTER	9-75VDC (100VDC)	255 W	Up to %92
IQ36	ISOLATED DC-DC CONVERTER	18-75VDC (VDC)	220 W	Up to %93
IQ48	ISOLATED DC-DC CONVERTER	34-75 VDC (100 VDC)	602W	Up to %95
IQ64	ISOLATED DC-DC CONVERTER	18-135VDC (-VDC)	200 W	Up to %91
IQ68	ISOLATED DC-DC CONVERTER	12-150VDC (170 VDC)	53 W	Up to %90
IQ70	ISOLATED DC-DC CONVERTER	34-135VDC (-VDC)	240 W	Up to %93
IQ72	ISOLATED DC-DC CONVERTER	42-110VDC (-VDC)	255 W	Up to %93
IQ90	ISOLATED DC-DC CONVERTER	34-160VDC (-VDC)	228 W	Up to %94
IQ1B	ISOLATED DC-DC CONVERTER	66-160VDC (170 VDC)	255 W	Up to %93
IQ2H	ISOLATED DC-DC CONVERTER	90-210VDC (250VDC)	150 W	Up to %90
IQ4H	ISOLATED DC-DC CONVERTER	180-425 VDC (475VDC)	600 W	Up to %92
NQ20	NON-ISOLATED DC-DC CONVERTER	9-20 VDC	800 W	Up to %94
NQ40	NON-ISOLATED DC-DC CONVERTER	9-40 VDC	800 W	Up to %94
NQ60	NON-ISOLATED DC-DC CONVERTER	9-60 VDC	2000 W	Up to %95
NQ90	NON-ISOLATED DC-DC CONVERTER	9-90 VDC	2000 W	Up to %96

SYNQOR HI-REL SOLUTIONS

- **Specification Compliance**
  - Hi-Rel series converters (with Hi-Rel filter) are designed to meet:
  - MIL-HDBK-704
  - RTCA/DO-160 Section 16, 17, 18
  - MIL-STD-1275
  - DEF-STAN 61-5 (Part 6)/(5, 6)
  - MIL-STD-461
  - RTCA/DO-160 Section 22
  - 55°C to +125°C Operating Temperature

	SINGLE OUTPUT											DUAL OUTPUT		
Full Size (MQFL)	1.5V 1R5S	1.8V 1R8S	2.5V 2R5S	3.3V 3R3S	5V 05S	6V 06S	7.5V 7R5S	9V 09S	12V 12S	15V 15S	28V 28S	±5V 05D	±12V 12D	±15V 15D
MQFL-28 (120W) **16-40Vin Cont.** **16-50Vin 1s Trans.** **Absolute Max Vin = 60V**	40A 60W	40A 72W	40A 100W	30A 99W	24A 120W	20A 120W	16A 120W	13A 117W	10A 120W	8A 120W	4A 112W	24A 120W Total	10A 120W Total	8A 120W Total
MQFL-28E (120W) **16-70Vin Cont.** **16-80Vin 1s Trans.** **Absolute Max Vin =100V**	40A 60W	40A 72W	40A 100W	30A 99W	24A 120W	20A 120W	16A 120W	13A 117W	10A 120W	8A 120W	4A 112W	24A 120W Total	10A 120W Total	8A 120W Total
MQFL-28V (100W) **16-40Vin Cont.** **5.5-50Vin 1s Trans.** **Absolute Max Vin = 60V**	40A 60W	40A 72W	40A 100W	30A 99W	20A 100W	17A 102W	13A 98W	11A 99W	8A 96W	6.5A 98W	3.3A 92W			
MQFL-28VE (100W) **16-70Vin Cont.** **5.5-80Vin 1s Trans.** **Absolute Max Vin = 100V**	40A 60W	40A 72W	40A 100W	30A 99W	20A 100W	17A 102W	13A 98W	11A 99W	8A 96W	6.5A 98W	3.3A 92W			
MQFL-270 (120W) **155-400Vin Cont.** **155-475Vin 1s Trans.** **Absolute Max Vin = 550V**	40A 60W	40A 72W	40A 100W	30A 99W	20A 100W	20A 120W	16A 120W	13A 117W	10A 120W	8A 120W	4A 112W	24A 120W Total	10A 120W Total	8A 120W Total
MQFL-270L (75W) **65-350Vin Cont.** **65-475Vin 1s Trans.** **Absolute Max Vin = 550V**	40A 60W	40A 72W	30A 75W	22A 72.6W	15A 75W	12A 72W	10A 75W	8A 72W	6A 72W	5A 75W	2.7A 75W	15A 75W Total	6A 72W Total	5A 75W Total

Half Size (MQHL)	1.5V 1R5S	1.8V 1R8S	2.5V 2R5S	3.3V 3R3S	5V 05S	6V 06S	7.5V 7R5S	9V 09S	12V 12S	15V 15S	28V 28S	±5V 05D	±12V 12D	±15V 15D
MQHL-28 (50W) **16-40Vin Cont.** **16-50Vin 1s Trans.** **Absolute Max Vin = 60V**	20A 30W	20A 36W	20A 50W	15A 50W	10A 50W	8A 48W	6.6A 50W	5.5A 50W	4A 48W	3.3A 50W	1.8A 50W	10A 50W Total	4A 48W Total	3.3A 50W Total
MQHL-28E (50W) **16-70Vin Cont.** **16-80Vin 1s Trans.** **Absolute Max Vin =100V**	20A 30W	20A 36W	20A 50W	15A 50W	10A 50W	8A 48W	6.6A 50W	5.5A 50W	4A 48W	3.3A 50W	1.8A 50W	10A 50W Total	4A 48W Total	3.3A 50W Total
Half Size (MQHR)	1.5V 1R5S	1.8V 1R8S	2.5V 2R5S	3.3V 3R3S	5V 05S	6V 06S	7.5V 7R5S	9V 09S	12V 12S	15V 15S	28V 28S	±5V 05D	±12V 12D	±15V 15D
MQHR-28 (25W) **16-40Vin Cont.** **16-50Vin 1s Trans.** **Absolute Max Vin = 60V** **10A**	10A 15W	10A 18W	10A 25W	7.5A 25W	5A 25W	4A 24W	3.3A 25W	2.75A 25W	2A 24W	1.65A 25W	0.9A 25W	5A 25W Total	2A 24W Total	1.65A 25W Total
MQHR-28E (25W) **16-70Vin Cont.** **16-80Vin 1s Trans.** **Absolute Max Vin =100V**	10A 15W	10A 18W	10A 25W	7.5A 25W	5A 25W	4A 24W	3.3A 25W	2.75A 25W	2A 24W	1.65A 25W	0.9A 25W	5A 25W Total	2A 24W Total	1.65A 25W Total
Bottom Pin (MQBL)	1.5V 1R5S	1.8V 1R8S	2.5V 2R5S	3.3V 3R3S	5V 05S	6V 06S	7.5V 7R5S	9V 09S	12V 12S	15V 15S	28V 28S	±5V 05D	±12V 12D	±15V 15D
MQBL-28 (20W) **16-40Vin Cont.** **16-50Vin 1s Trans.** **Absolute Max Vin = 60V**	8A 12W	8A 14.4W	8A 20W	6A 19.8W	4A 20W	3.3A 19.8W	2.6A 19.5W	2.2A 19.8W	1.6A 19.2W	1.3A 19.5W	0.72A 20.2W	4A 20W Total	1.6A 19.2W Total	1.3A 19.5W Total
MQBL-28E (20W) **16-70Vin Cont.** **16-80Vin 1s Trans.** **Absolute Max Vin =100V**	8A 12W	8A 14.4W	8A 20W	6A 19.8W	4A 20W	3.3A 19.8W	2.6A 19.5W	2.2A 19.8W	1.6A 19.2W	1.3A 19.5W	0.72A 20.2W	4A 20W Total	1.6A 19.2W Total	1.3A 19.5W Total

SYNQOR AC-DC SOLUTIONS

PFICQor™ Isolated Power Factor Correction

MPFCQor™ 3-Phase Power Factor Correction

PRODUCT	PACKAGE	INPUT VOLTAGE RANGE (TRANSIENT)	OUTPUT	ISOLATION
MACF-115-3PH-UNV-HT-N-S	Half brick	3 phase 85-40VAC @ 45-800Hz	3 x 6A / 2,0kW (LN)	(2150VDC)
MACF-115-3PH-UNVD-QT-N-S	Quarter brick	3 phase 85 –140VAC@ 45-800Hz	3 x 6A / 2,0kW (LN)	(2150VDC)
MACF-115-3PH-UNV-QG-N-S	Quarter brick	3 phase 85 – 140VAC @ 45-800Hz	3 x 3A / 1,0kW (LN)	(2150VDC)
MACF-440-3PH-UNV-MP-D-S	MP	3 phase 320- 528VAC @ 45-800Hz	3 x 10A	(2150VDC)
MACF-xx0-230-HT-N-S	Half brick	85 ... 264VAC, 9A 060:50/60Hz, 400:400Hz	9A / 2kW @230VAC 1kW @115VAC	(2150VDC)
MACF-U-230-ET-N-S	Eighth brick	1 phase 85 –264VAC @ 45-800Hz	5A / 1kW @230VAC 500W @115VAC	(2150VDC)
InQor				
ACLF-060HTC230RS-G	Half brick	1 phase 85 – 264VAC @45-65Hz	9A / 2kW @230VAC 1kW @115VAC	(2150VDC)
ACLFUNVETC230RS-G	Eighth brick	1 phase 85 – 264VAC @ 45-800Hz	5A / 1kW @230VAC 500W @115VAC	(2150VDC)
AeroQor				
ACF-U-230-QM-C-G	Quarter brick	1 faz 85-264VAC @ 45-800Hz	2A / 460W @230VAC 230W @115VAC	(2150VDC)
ACF-U-230-QT-C-G	Quarter brick	1 faz 85 – 264VAC @ 45-800Hz	5A / 1,1kW @230VAC 575W @115VAC	(2150VDC)
ACF-U-115-3PH-QG-C-G	Quarter brick	3 faz 85 –140VAC @ 45-800Hz	3A / 1kW @115VAC	(2150VDC)

PRODUCT	PACKAGE	INPUT VOLTAGE RANGE (TRANSIENT)	OUTPUT	ISOLATION	EFFICIENCY
MPFC-115-3P-270-FP-N-S	Full brick	85 – 140VAC @ 45-800Hz	270VDC / 5,8A / 1500W	(2150VDC)	~%94.1
MPFC-115-3P-270P-FP-N-S	Full brick	85 – 140VAC @ 45-800Hz	270VDC / 5,8A / 1500W	(2150VDC)	~%94.1
MPFC-440-3PH-400-LE-D-S	LE	360 – 528VAC L-L @ 47-800Hz	400VDC / 5kW	(3000VDC)	~%97
MPFC-U-390-HP-N-S	Half brick	85 – 264VAC @ 45-63 / 360-800Hz	390VDC / 1,8A / 700W	(2150VDC)	~%94
MPFC-115-270-HP-N-S	Half brick	85 – 180VAC @ 45-63 / 360-800Hz	270VDC / 2,7A / 700W	(2150VDC)	~%95
MPFC-U-390-QP-N-S	Quarter brick	85 – 264VAC @ 45-63 / 360-800Hz	390VDC / 0,9A / 350W	(2150VDC)	~%94
MPFC-115-270-QP-N-S	Quarter brick	85 – 180VAC @ 45-63 / 360-800Hz	270VDC / 1,3A / 350W	(2150VDC)	~%94
InQor					
PFCU390HPC07SRS-G	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	390V / 1,8A / 700W	(2150VDC)	~%94
PFCU390QPC04SRS-G	Quarter brick	85 – 180VAC @ 45-63 / 360-800Hz	390VDC / 0,9A / 350W	(2150VDC)	~%94

PRODUCT	PACKAGE	INPUT VOLTAGE RANGE (TRANSIENT)	OUTPUT	ISOLATION	EFFICIENCY
MPFIC-U-12-FT-N-S-D	Full brick	85 – 264Vrms 45-65Hz / 360-800Hz	12VDC / 66.7A /800W	4250VDC /2500VDC	~%87
MPFIC-U-24-FT-N-S-D	Full brick	85 – 264Vrms 45-65Hz / 360-800Hz	24VDC / 33,3A /800W	4250VDC /2500VDC	~%91
MPFIC-U-28-FT-N-S-D	Full brick	85 – 264Vrms 45-65Hz / 360-800Hz	28VDC / 28,6A /800W	4250VDC /2500VDC	~%91
MPFIC-U-48-FT-N-S-D	Full brick	85 – 264Vrms 45-65Hz / 360-800Hz	48VDC / 16,7A /800W	4250VDC /2500VDC	~%91
MPFIC-U-12-HT-N-S-D	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	12VDC / 27A /325W	4250VDC /2500VDC	~%91
MPFIC-U-24-HT-N-S-D	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	24VDC / 13,5A /325W	4250VDC /2500VDC	~%91
MPFIC-U-28-HT-N-S-D	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	28VDC / 11,5A /325W	4250VDC /2500VDC	~%91
MPFIC-U-48-HT-N-S-D	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	48VDC / 6,8A /325W	4250VDC /2500VDC	~%91
MPFIC-115-3PH-12R/D-FT-N-S	Full brick	100–140VrmsL-N 47-800Hz	12VDC / 60A / 720W	2150VDC	~%92
MPFIC-115-3PH-24R/D-FT-N-S	Full brick	100–140VrmsL-N 47-800Hz	24VDC / 31A / 750W	2150VDC	~%92,5
MPFIC-115-3PH-28R/D-FT-N-S	Full brick	100–140VrmsL-N 47-800Hz	28VDC / 26,8A / 750W	2150VDC	~%92,5
MPFIC-115-3PH-48R/D-FT-N-S	Full brick	100–140VrmsL-N 47-800Hz	48VDC / 15A / 720W	2150VDC	~%91,5
MPFIC-115-3PH-54R/D-FT-N-S	Full brick	100–140VrmsL-N 47-800Hz	54VDC / 14A / 750W	2150VDC	~%91,5
InQor					
PFICU12HTC27NRD-G	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	12VDC / 27A /325W	4250VDC /2500VDC	~%91
PFICU24HTC14NRD-G	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	24VDC / 13,5A /325W	4250VDC /2500VDC	~%91
PFICU28HTC12NRD-G	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	28VDC / 11,5A /325W	4250VDC /2500VDC	~%91
PFICU48HTC07NRD-G	Half brick	85 – 264Vrms 45-65Hz / 360-800Hz	48VDC / 6,8A /325W	4250VDC /2500VDC	~%91
AeroQor					
APFIC-115-3PH-12R/D-FT-C-G	Full brick	100–140VrmsL-N 47-800Hz	12VDC / 60A / 720W	2150VDC	~%92
APFIC-115-3PH-24R/D-FT-C-G	Full brick	100–140VrmsL-N 47-800Hz	24VDC / 31A / 750W	2150VDC	~%92,5
APFIC-115-3PH-28R/D-FT-C-G	Full brick	100–140VrmsL-N 47-800Hz	28VDC / 26,8A / 750W	2150VDC	~%92,5
APFIC-115-3PH-48R/D-FT-C-G	Full brick	100–140VrmsL-N 47-800Hz	48VDC / 15A / 720W	2150VDC	~%92,5
APFIC-115-3PH-54R/D-FT-C-G	Full brick	100–140VrmsL-N 47-800Hz	54VDC / 14A / 750W	2150VDC	~%92,5
APFIC-U-12R/D-FT-C-G	Full brick	85 – 264Vrms 47-65Hz / 360-800Hz	12VDC / 66.7A /800W	4250VDC /2500VDC	~%87
APFIC-U-24R/D-FT-C-G	Full brick	85 – 264Vrms 47-65Hz / 360-800Hz	24VDC / 33,3A /800W	4250VDC /2500VDC	~%91
APFIC-U-28R/D-FT-C-G	Full brick	85 – 264Vrms 47-65Hz / 360-800Hz	28VDC / 28,6A /800W	4250VDC /2500VDC	~%91
APFIC-U-48R/D-HT-C-G	Full brick	85 – 264Vrms 47-65Hz / 360-800Hz	48VDC / 16,7A /800W	4250VDC /2500VDC	~%90
APFIC-U-55R/D-HT-C-G	Full brick	85 – 264Vrms 47-65Hz / 360-800Hz	55VDC / 14,5A /800W	4250VDC /2500VDC	~%90
APFIC-U-12R/D-HT-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	12VDC / 27A /325W	4250VDC /2500VDC	~%92
APFIC-U-24R/D-HT-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	24VDC / 13,5A /325W	4250VDC /2500VDC	~%92
APFIC-U-28R/D-HT-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	28VDC / 11,5A /325W	4250VDC /2500VDC	~%92
APFIC-U-48R/D-HT-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	48VDC / 6,8A /325W	4250VDC /2500VDC	~%92
APFIC-U-55R/D-HT-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	55VDC / 6A /325W	4250VDC /2500VDC	~%92
APFIC-U-12R/D-HM-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	12VDC / 8,4A /100W	4250VDC /2500VDC	~%88
APFIC-U-24R/D-HM-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	24VDC / 4,3A /100W	4250VDC /2500VDC	~%88
APFIC-U-28R/D-HM-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	28VDC / 3,6A /100W	4250VDC /2500VDC	~%88
APFIC-U-48R/D-HM-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	48VDC / 2,1A /100W	4250VDC /2500VDC	~%88
APFIC-U-55R/D-HM-C-G	Half brick	85 – 264Vrms 47-63Hz/360-800Hz	55VDC / 1,8A /100W	4250VDC /2500VDC	~%88

SYNQOR SYSTEM SOLUTIONS

Products	Phase	Voltage	Frequency	Input	Voltage	Power	DC-1 (4)	DC2 (5)	Battery	Süresi (6)(dak)	Phase	Voltage	Frequency
UPS-3000-S-2U	1F-N	85-65VAC	47-800 Hz	(22-33V)	115/230VAC	2500W	(2x500W)	(2250W)	1x200W	10 / 13 / 21	2U, 22,2"	65Lbs	Military
UPS-1500-S-1U	1F-N	85-265VAC	47-65Hz	(22-33V)	115/230VAC	1250W	(1x500W)	(1250W)	1x200W	10 / 13 / 21	1U, 21,6"	32Lbs	Military
UPS-1500-E-2U	1F-N	85-265VAC	47-65Hz	(22-33V)	115/230VAC	1250W	(1x500W)	(1250W)	1x500W	24 / 31 / 50	2U, 21,6"	50Lbs	Military
UPS-1500-S-2S	1F-N	85-265VAC	47-65Hz	(22-33V)	115/230VAC	1250W	(1x500W)	(1250W)	1x200W	10 / 13 / 21	1U, 13,8"	33Lbs	Military
UPS-1500-S-1U-T	3F Δ	85-140 L-N	47-800Hz	(22-33V)	115/230VAC	1250W	(1x500W)	(1250W)	1x200W	10 / 13 / 21	1U, 22,5"	32Lbs	Military
UPS-1500-E-2U-T	3F Δ	147-242 L-L	47-800Hz	(22-33V)	115/230VAC	1250W	(1x500W)	(1250W)	1x500W	24 / 31 / 50	2U, 22,5"	32Lbs	Military
UPS-MS-1500-S-2U	1F-N	85-265VAC	47-65Hz	None	115/230VAC	1250W	None	None	1x200W	10 / 13 / 21	2U, 21,3"	42Lbs	Commercial

UPS Product Features Specification Compliance

- Sealed, weather-proof, shock-proof construction
- Military Tough, Die-Cast Aluminum Chassis

UPS units are designed to meet:

- MIL-STD-704F - Aircraft Electrical Power Characteristics
- MIL-STD-1399-300B - Interface Std for Shipboard Systems
- MIL-STD-1275D - Vehicle Electrical Power Characteristics
- MIL-STD-461F - Electromagnetic Interference
- MIL-STD-810G - Environmental Engineering Considerations

Products	Phase	Voltage	Frequency	Input	Voltage	Power	DC-1	DC2	Dimensions	Weight	Connector
MPC-3000-2U	1F-N	85-65VAC	47-800 Hz	(22-33V)	115/230VAC	2500W	(2x500W)	(2250W)	2U, 22,2"	49 lbs	Military
MPC-1500-1U	1F-N	85-265VAC	47-800Hz	(22-33V)	115/230VAC	1250W	(1x500W)	(1250W)	1U, 21,6"	24Lbs	Military
MPC-1250DC	1F-N	85-265VAC	47-800Hz	(22-33V)	None	1250W	(1250W)	None	1U, 14.8"	22 lbs.	Military

Product	Power	Battery Run-Time @ Full Power	Watt hours	Height	Weight	DC input	DC output	AC input	AC input Frequency	DC Output voltage	Output Power
EBM -1000-2U	1250 W	>45 min.	1000 W Hr	2U:3.40"	61 lbs.	(22-33V)	28 V	85-264 Vrms	47-800 Hz	28 V	3000W
	2500 W	>20 min.									

MODEL	OUTPUT POWER	PACKAGE SIZE	INPUT/OUTPUT DESCRIPTION	INPUT TYPE	OUTPUT FREQUENCY
MINV-4000-1U-28	4000 W	1U - 22.4 X 17 INCHES	20-33 VDC TO SINGLE PHASE 115 OR 230 VRMS	DC	50, 60, OR 400 HZ
MINV-4000-1U-270	4000 W	1U - 22.4 X 17 INCHES	160-330 VDC TO SINGLE PHASE 115 OR 230 VRMS	DC	50, 60, OR 400 HZ

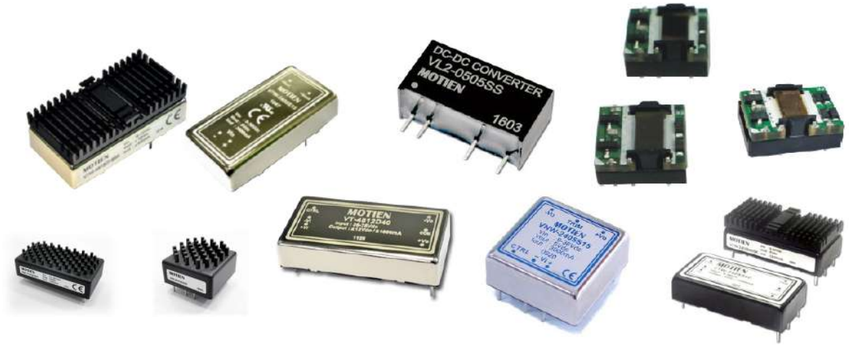
MOTIEN

www.motien.com.tw

MOTIEN TECHNOLOGY WAS ESTABLISHED IN 1998, WE HAVE OUR YOUNG BUT WELL EXPERIENCED AND AGGRESSIVE TEAMS, MODERN ADMINISTRATION SYSTEM, ADVANCED FACILITIES - THANK TO THE EFFORTS FROM OUR COLLEAGUES OVER LAST DECADE, THE BRAND MOTIEN HAS BECOME WELL KNOWN AND A SYMBOL OF QUALITY AND RELIABILITY!

With the motif of “Self Challenge”, we treat ourselves as the main competitor and we aim our target in the worldwide marketing and giving a helping hand to improve human’s life. During the past decade, MOTIEN has grown up from a small company with some design engineers into a medium firm with approx 240 employees. Our marketing territory has covered Europe, North America, Asia and Australia. The punctual delivery, competitive price and perfect quality gain us good reputation from clients all over the world.

Motien has now more than 30 series of DC/DC converters, LED drivers and AC/DC converter modules. Products are widely built in modern electronic equipments: Industries Automation equipments, Telecommunication equipments, instruments, transportation system, medical equipments etc.



PRODUCT GROUPS

ISOLATED DC/DC CONVERTERS

- SIP-Packages
- DIP-Packages

NON-ISOLATED DC/DC CONVERTERS

- SIP-Packages
- SMD-Packages

RAILWAY SERIES

SMD SERIES

LED DRIVERS

GENERAL SPECIFICATION

- Power rating: 0.25W~60W
- DC / DC converters, LED drivers
- Customized products
- Minor change of standard product
- New product development

SERIES	POWER		INPUT VOLTAGE (DC)			OUTPUT VOLTAGE		CASE PACKAGE
VA	0,25~1,5W		3R3, 5, 12, 15, 24, 48	U	S	3.3~24V	Plastic	SIP4,DIP8
V1	0,5~1W		3R3, 5, 12, 24, 48	U	S/D	3.3~±24V	Plastic	SIP7,DIP14
V1-S/D01	1W		5, 12, 24, 48	U	DS	3.3~24V	Plastic	SIP7,DIP14
VA-D01	1W		3R3, 5, 12, 15, 24	U	DS	3.3~24V	Plastic	SIP4,DIP8
VA-DD1	1W		5, 12, 24	U	D	3.3~±24V	Plastic	SIP4,DIP8
VL(H)	1W		5, 9, 12, 15, 24	U	S/D	±5~±15V	Plastic	SIP7
MB	1W	2:1	4.5~9V, 9~18V, 18~36V, 36~75V	R	S/D	5~24V , ±12~±15V	Plastic	SIP6
T1	1W		5, 12, 24	U	S/D	±5~±15V	Plastic	SIP7
V3	2W		5, 12, 24, 48	U	S/D	±3.3~±24V	Plastic	SIP7,DIP14
V3-S/D01	2W		5, 12, 24	U	DS	3.3~24V	Plastic	SIP7,DIP14
VE-S(H)	2W		5, 12, 15, 24, 48	U	S	3.3~24V	Plastic	SIP4
M1	1~3W		5, 12, 15, 24, 48	SR	S/D	5, 9, 12, 15	Plastic	SIP7
V4-T	1W		3R3, 5, 12, 24	R	S	3.3~15V	Plastic	SIP7,DIP14
M4	1W		5, 12, 24	R	S	3R3, 5, 7R2, 9, 12, 15	Plastic	SIP7,DIP14
VB	1~3W	2:1	4.5~9V, 9~18V, 18~36V, 36~72V	R	S/D	3.3~±24V	Plastic	SIP8,DIP16
V5	1,5~3W		5, 12, 24	R	S/D	3.3~±24V	Plastic	DIP24
VF	1,5~3W		5, 12, 24	R	S	3.3~24V	Plastic	SIP12
VBW	2~3W	4:1	9~36V, 18~75V	R	S/D	3.3~15V	Plastic	SIP9
RBW	2~3W	4:1	4R5~18V, 9~36V, 18~75V	R	S/D	3.3~±15V	Plastic	0.86”x0.36”
VHD	3,5W		5~12V	R	S	3.3~15V	Plastic	DIP24
MJ	1,5~6W	2:1	4.5~9V, 9~18V, 18~36V, 36~75V	R	S/D	5~±15V	Metal	1.08”x0.7”
R6, RD, RG	1,5~6W	2:1	4.5~9V, 9~18V, 18~36V, 36~72V	R	S/D	5~±24V	Plastic	DIP24
RJ, RK, RP	1,5~6W	4:1	9~36V, 18~72V	R	S/D	5~±24V	Plastic	DIP24
V6, VD, VG	1,5~6W	2:1	9~18V, 18~36V, 36~72V	R	S/D	3.3~±24V	Metal	DIP24
VJ, VK, VP, VQ	1,5~6W	4:1	9~36V, 18~72V	R	S/D	3.3~±24V	Metal	DIP24
MD	3W, 6W	2:1	9~18V, 18~36V, 36~75V	R	S/D	3.3~±24V	Plastic	DIP24
MK	3W, 6W	4:1	9~36V, 18~75V	R	S/D	3.3~±24V	Plastic	DIP24
VB	6W	2:1	4.5~9V, 9~18V, 18~36V, 36~72V	R	S/D	3,3~24V , ±5~±15V	Plastic	SIP8
V7	7~15W	2:1	9~18V, 18~36V, 36~72V	R	S/D	3.3~±24V	Metal	2”x1”
V7W	10~15W	4:1	9~36V, 18~72V	R	S/D	3.3~±15V	Metal	2”x1”
V7L	15~30W	2:1	9~18V, 18~36V, 36~72V	R	S/D	3.3~±24V	Metal	2”x2”
VM	25-30W	2:1	9~18V, 18~36V, 36~75V	R	S/D	3.3~±15V	Metal	2”x1.6”
VD-10	8~10W	2:1	9~18V, 18~36V, 36~72V	R	S/D	3.3~±15V	Metal	DIP24
VU-12	12W	2:1	9~18V, 18~36V, 36~75V	R	S/D	2.5~±15V	Metal	DIP24
VV-12	12W	4:1	9~36V, 18~75V	R	S/D	3.3~±15V	Metal	DIP24
V7E	10-15W	2:1	9~18V, 18~36V, 36~75V	R	S/D	3.3~±15V	Metal	2”x1”
VN	15-20W	2:1	9~18V, 18~36V, 36~75V	R	S/D	3.3~±15V	Metal	1”x1”
VNW	15-20W	4:1	9~36V, 18~75V	R	S/D	3.3~±15V	Metal	1”x1”
V8	20W	2:1	9~18V, 18~36V, 36~75V	R	S/D	3.3~±15V	Metal	2”x1”
V9	20W	4:1	9~36V, 18~75V	R	S/D	3.3~±15V	Metal	2”x1”
VT	30-40W	2:1	9~18V, 18~36V, 36~75V	R	S/D	3.3~±15V	Metal	2”x1”
VTW-30	30W	4:1	9~36V, 18~75V	R	S/D/T	3.3~±15V	Metal	2”x1”
M40A	40W	4:1	9~36V, 18~72V	R	S/D	3.3~15V	Metal	2”x2”
M60	60W	2:1	18~36V, 36~75V	R	S	3.3~15V	Metal	2”x2”

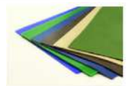
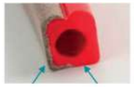
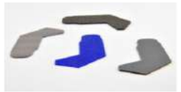
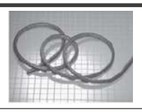
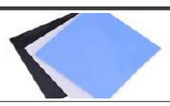
U: Unregulated - R: Regulated - SR: Semi Regulated - S: Single - D: Dual
S/D: Single & Dual - DS: Dual Seperated

Note: All combinations may not be available. Please check the datasheet

P&P TECHNOLOGY - EMCEMI

www.p-p-t.co.uk - www.emcemi.com

ABOUT EMC EMI SHIELDING SOLUTIONS EMCEMI STAFF HAVE BETWEEN THEM, OVER 50 YEARS' EXPERIENCE IN THE MANUFACTURING PROCESSES INVOLVED IN MAKING HIGH QUALITY & RELIABLE EMC & RFI COMPONENTS, WHILE SPECIALISING IN THE MANUFACTURE AND SUPPLY OF A WIDE RANGE OF PRODUCTS WHICH ARE MANUFACTURED AT OUR BRAND NEW FACTORY IN ESSEX IN THE UNITED KINGDOM. WE MANUFACTURE COMPONENTS TO MIL83528C SPECIFICATION.

			
Conductive Elastomers	Conductive Elastomers	Conductive Elastomers Moulded 'O' Rings	Co-extrusion Conductive Gasket
			
Aluminium Honeycomb Vents	Round Aluminium Honeycomb Vents	Steel Honeycomb Vents	Oriented Wires in Silicone
			
Knitted Wire Mesh	Knitted Wire Mesh over Elastomer Core	Knitted Wire Mesh with Enviromental IP Carrier	Knitted Wire Mesh Moulded to Silicon-Fluorosilicone
			
Fabric Over Foam	Neoprene Sponge	Copper & Aluminium Conductive Foil Tape	Shielded Windows
			
Compressed Mesh 'O' Rings	Conductive Sponge Material	Thermal Graphite	Composite Wire Mesh
			
Expanded Wire Gasket	Co-extrusion Conductive	Thermal Gap Pad	Connector Gaskets
			
Silicone	Copper Fingerstock	Shielded Windows	Thermal Pad

MOOG

www.moogs3.com

MOOG SENSOR AND SURVEILLANCE SYSTEMS' SECTOR, A MEMBER IN THE SPACE AND DEFENSE GROUP, IS COMPRISED OF FOUR STRATEGIC ACQUISITIONS. THE ACQUIRED COMPANIES WERE FORMALLY KNOWN AS QUICKSET INTERNATIONAL, VIDEOLARM, INC, PIEPER GMBH AND KNOX VIDEO.

Markets We Serve

MILITARY MARKETS

Communications

Moog customizes fast, precise antenna positioning solutions for aerial, ground, and maritime telemetry communications and tracking applications. Integrated on-board transmitter / receiver configurations provides RF-to-Network interfacing with all RF data modulation and demodulation right from the positioner platform.

Border Security

Moog understands the demand for constant vigilance in matters regarding border protection. High-definition and/or thermal imaging network cameras and sensor systems designed to rugged Mil-STD specifications provide lasting visibility in otherwise unfavorable, low-light conditions.

Perimeter Security

Moog perimeter solutions are engineered to meet the challenges of terrain, climate, and target characteristic/type. Moog pan, tilt, zoom (ptz) cameras and integrated sensor systems can be incorporated into a border security and surveillance scheme with radars and other sensors in a slew-to-cue mode.

Vehicle

Moog offers products that are designed and built to deliver clear intelligence while enduring the harshest demands of on and off the road vibration.

Man Portable

Moog recognizes the importance of size, weight, performance, and rapid deployment. Our systems are typically used in harsh environments, surviving rigorous and abusive applications. They are well known in the industry for their reliability, operability and survivability.

INDUSTRIAL MARKETS

Broadcast

Moog positioners are proven reliable for demanding payload, wind load, transportation shock and vibration conditions. Broadcast positioners are available as stand-alone units, or as integrated custom systems.

Law Enforcement

Moog understands the demand for constant vigilance in matters regarding the military, law enforcement, and border protection. High-definition and/or thermal imaging network cameras and sensor systems designed to rugged Mil-STD specifications provide lasting visibility in otherwise unfavorable, low-light conditions. Purpose engineered pan/tilt positioners enhance the capabilities of these systems by providing unmatched precision on a wide range of targets. Man portable units are available for rapid deploy operations.

Oil & Gas

Critical assets and resources, such as oil and gas, require 24/7 surveillance to detect outside threats and prevent potentially catastrophic events. Moog provides solutions to reduce the risk of economic loss and human injury at critical exploration and production sites.

Energy

Electrical Grid Networks, Distribution Lines, and Power Generation Stations - often unmanned and located away from heavily populated areas - are easy targets for vandalism and terrorism if not properly protected.

COMMERCIAL MARKETS

Transportation

In a time of shrinking transportation budgets, and increased congestion, intelligent transportation systems (ITS) surveillance solutions must work right out of the box, and they must survive over time.

Maritime

Moog engineers design sensor and surveillance systems for marine and coastal environments. High Definition network cameras enclosed in pressurized housings resist water and dust contamination, stainless steel construction eliminates corrosion, and thermal technology offers visibility during rain, fog and even total darkness for around-the-clock vigilance.

City-wide Surveillance

Moog military solutions offer accuracy and high repeatability in extreme conditions. Sensor and surveillance systems built to Mil-Spec ratings are engineered for both mobile and man-portable military applications.

MOOG PRODUCTS

Camera Systems
- Long Range Camera Systems
- Mid Range Camera Systems
- Short Range Camera Systems
- Fixed Network Camera Systems
- PTZ Network Camera Systems
- PTZ Analog Camera Systems

Power & Wireless
- Power
- Wireless

Video Control & Interface
- Controllers

Pan & Tilt Positioners
- MPT 90
- MPT-50
- Mercury
- Taurus - Taurus-R
- QPT 20
- QPT 200 / 500
- RF Series

Tripods
- Gibraltar
- Hercules
- Samson

Camera Enclosures
- Box Camera Enclosures
- Dome Camera Enclosures
- Corrosion Resistant

Video Accessories
- Brackets & Mounts
- Poles & Lowering Devices
- Additional Accessories

Video Switches
- Chameleon

PAN & TILT POSITIONER

MPT-50

Robust and reliable mechanical design
- Payload capacity up to 75 pounds
- Provides up to 50 foot pounds of elevation torque
- Versatile platform design for ease of customization
- Tabletop design accommodates a wide variety of payloads

Control and Configurability
- Embedded web server
- Serial or Serial over IP control
- Health and usage monitoring
- HD-SDI slip ring models available
- Continuous Rotation available
- Multiple payload communication ports: 4 configurable serial, 2 TTL and 1 IP port
- 10-bit linear response velocity control
- Standardized connectors
- GPS capability

MPT-90

Robust and reliable mechanical design
- Payload capacity up to 100 pounds
- Provides up to 90 foot pounds of elevation torque
- Versatile platform design for ease of customization
- Tabletop design accommodates a wide variety of payloads

Control and Configurability
- Embedded web server
- Serial or Serial over IP control
- Health and usage monitoring
- HD-SDI slip ring models available
- Continuous Rotation available
- Multiple payload communication ports: 4 configurable serial, 2 TTL and 1 IP port
- 10-bit linear response velocity control
- Standardized connectors
- GPS capability

Mercury

- Health and usage monitoring
- Embedded web server
- Dual HD-SDI slip ring
- Continuous 360° rotation
- Serial or Serial over IP control
- IP67, MIL-STD-810 salt/fog & CE rated
- Payload Weight – Fixed 75 lbs (total)
- Payload Weight – Mobile 50 lbs (total)
- Reliable, high level of accuracy
- 10-bit linear response velocity control
- Easy integration with open source protocol

PAN & TILT POSITIONER

MPT-RF Series

- Supports multiple antenna sizes, from man-portable up to 3-meters
- Embedded web server
- Serial or serial over IP control
- Health and usage monitoring
- 10-bit linear response velocity control
- GPS capability
- Antennas (Parabolic/Dish/Patch/Grid)
- Marine configuration that meets IP-67 standards
- Shock & Vibration Mil-spec tested.

QPT-20

- Payloads up to 8 ft-lbs (10.8 Nm)
- Analog driven or Digital Serial Integrated Controller (IC) models
- Mounting platforms include plain formed table top and table top with single tilt-axis connector
- Internal wire table top for pass-through or IC sensor wiring on certain models
- Fixed, Inverted or Mobile Installations
- Mil-Spec Connectors
- Tough metal housing and gearing for durability in harsh environments
- Marine configuration that meets IP-67 standards
- Shock & Vibration Mil-spec tested.

QPT 200 / 500

- Payloads up to 500 ft-lbs (678 Nm)
- Analog driven or Digital Serial Integrated Controller (IC) models
- Fixed, Inverted or Mobile Installations
- Mil-Spec Connectors
- Tough metal housing and gearing for durability in harsh environments
- Marine configuration that meets IP-67 standards

BOX CAMERA ENCLOSURES

Fusion Camera Housing (Thermiq)

- Meets NEMA Type 4X and IP66 standards
- IK10 impact rated
- Accommodates wide-angle lenses up to 135°
- Adjustable sunshield (“Y” models)
- 24vac or 12vdc input, heater & blower
- Hinged wall mount allows for easy installation
- Standard wall / pole mount (no adapters needed)
- Optional sunshield, and aluminum ceiling mount brackets available
- PoE or 12/24v input model
- Supports PoE Plus IEEE802.3at and IEEE802.3af compliant cameras
- True PoE power to the camera (no splitter needed)
- Automatically adjusts to power loss for long cable runs
- DPA ensures maximum power to the camera

Thermiq model

- Air-to-air heat exchanger transfers heat from inside to outside the housing
- Low-power requirements

LONG RANGE CAMERA SYSTEMS

MPT-90 Camera System

System Performance

- Reliable, Repeatable Positioning
- Wide Operating Temperature
- Built for Rugged Environments
- Slip Ring that Provides HD-SDI Video Throughput
- HD IP Video Output and Control Optional

Day Camera Features

- Auto Focus
- HD or SD Imagery and Optics
- NIR Corrected Optics
- Fog and Haze Mitigation Algorithms
- Excellent Low Light Performance
- Optional Scintillation Removal and Electronic Image Stabilization
- Optional Optical Image Stabilization

CONTROLLERS

Unicom® & Unicom® LT

- Proportional Joystick with high speed or precision movement for pan and tilt movement
- 20 character by-line LCD display screen / Control and program of presets and tours
- Rugged metal weatherproof chassis / RS232/422 Serial data interface
- RJ45 Connector for Ethernet 10/100 Base T interface / USB connector (2) / 10-28VDC power input
- Sensor Compatibility / Control of zoom, focus and iris commands
- Future camera specific controls programmable / Configurable with software GUI or LCD menu

TRIPODS

Gibraltar

- Alodine finished parts for resistance to harsh environments
- Adapters and heads for any sensor payload
- Rapid deployment

Hercules

- Alodine finished parts for resistance to harsh environments
- Adapters and heads for any sensor payload
- Rapid deployment

Samson

- Payload capacity up to 90 lbs
- Anodized tubular construction guarantees years of reliable service
- Adapters and heads for any sensor payload
- Adapters and heads for any sensor payload

ICPE ELECTRICAL ENGINEERING COMPANY

www.icpe.ro

ICPE OR INSTITUTUL DE CERCETĂRI ELECTROTEHNICE® WAS ESTABLISHED OVER 65 YEARS AGO. THE MODERN RESEARCH INFRASTRUCTURE, OBTAINED SUCCESSFULLY FOLLOWING THE PERFORMANCE OF LOCAL AND INTERNATIONAL PROJECTS, IS A SOLID BASIS FOR FURTHER RESEARCH IN ELECTRICAL ENGINEERING, AND RELATED FIELDS.

ICPE Electrical Engineering Company design, develop and produce different types of permanent magnets electrical machines.

Permanent Magnet Synchronous Frameless Torque Motors KSO/H Series

The torque motors of KSO/H series are low speed brushless synchronous motors excited by rare earth permanent magnets located on the rotor. These motors are delivered as frameless kit (rotor and stator sets) and were optimized for high torque density, low cogging torque, compact design and improved efficiency.

Frameless torque motors designed to be compact and cost effective, allow direct coupling with the payload, eliminating parts of mechanical transmission, maintenance free, high energy NdFeB magnets maximize torque density, customized winding for different desired voltage.

PRODUCT CODE	CONTINUOUS STALL TORQUE Nm	OUTER DIAMETER mm	INNER DIAMETER mm	LENGTH ACTIVE/TOTAL mm
KSO/H 170 010	3,5	170	74	9.9/31.6
KSO/H 170 025	9,1			25.9/47.6
KSO/H 170 050	15,3			50.9/72.6
KSO/H 170 075	21,3			75.9/97.6
KSO/H 170 100	27,6			100.9/122.6
KSO/H 230 010	8,7	230	130	9.9/31.6
KSO/H 230 025	21,7			25.9/47.6
KSO/H 230 050	41,1			50.9/72.6
KSO/H 230 075	65,6			75.9/97.6
KSO/H 230 100	83,6			100.9/122.6
KSO/H 275 010	12	275	172	9.9/32.6
KSO/H 275 025	31			25.9/48.6
KSO/H 275 050	60			50.9/73.6
KSO/H 275 075	89,4			75.9/98.6
KSO/H 275 100	116,6			100.9/123.6
KSO/H 330 010	20,5	330	210	9.9/32.6
KSO/H 330 025	49			25.9/48.6
KSO/H 330 050	100,5			50.9/73.6
KSO/H 330 075	150			75.9/98.6
KSO/H 330 100	202			100.9/123.6

Permanent Magnet Synchronous Frameless Compact Motors KSO/H Series

The frameless compact motors of KSO/H series are high performance brushless synchronous motors excited by rare earth permanent magnets located on the rotor. These motors are delivered as frameless kit (rotor and stator sets) and were optimized for high torque density, low cogging torque, compact design at minimal cost. The stator consists of a laminated steel core in whose slots is located a three phase star connected winding.

PRODUCT CODE	CONTINUOUS STALL TORQUE Nm	OUTER DIAMETER mm	INNER DIAMETER mm	LENGTH ACTIVE/TOTAL mm
KSO/H 036 013	0.08	35.81	10	12.7/34.1
KSO/H 036 025	0.15			25.4/46.8
KSO/H 036 038	0.23			38.1/59.5
KSO/H 036 051	0.3			50.8/72.2
KSO/H 056 019	0.36	55.7	15	19.05/42.9
KSO/H 056 038	0.68			38.1/91.9
KSO/H 056 057	0.98			57.15/80.9
KSO/H 056 076	1.28			76.2/99.9
KSO/H 082 019	0.81	81.28	25	19.05/39.8
KSO/H 082 038	1.57			38.1/58.8
KSO/H 082 057	2.32			57.15/77.8
KSO/H 082 076	3.03			76.2/96.8
KSO/H 127 025	4.29	127	35	25.4/50.8
KSO/H 127 051	8			50.8/76.2
KSO/H 127 076	11.1			76.2/101.6
KSO/H 127 102	14.1			101.6/127
KSO/H 127 127	17.2			127/152.4
KSO/H 127 153	20.2			152.4/177.8

DC Brushed Torque Motors

DC Torque Motors operate on the same principles as the conventional DC motors but the magnetic circuit design and consequent mechanical configuration are designed for maximum torque output rather than the usual low torque / high speed characteristic. Arrange of unhoused units which are supplied as three separate components, a permanent magnet field assembly, a wound armature with precision bore for mounting and a brush ring assembly or brush segments.

Fixed element – the stator, is equipped with rare earth permanent magnets and the rotor is equipped with a dc specific winding which is connected to an extra flat commutator – brushed system. Low speed Torque Motors are beneficial for direct-drive applications. Position and velocity feedback can be achieved via additions of DC Tachos, Resolvers or Optical Encoders. The unhoused motors described below can be offered in custom designed housings for specific applications.

PRODUCT CODE	PEAK TORQUE [mNm]	TORQUE SENSITIVITY [mNm/A]	MOTOR CONSTANT [mNm/W]	OUTSIDE DIAMETER [mm]	HEIGHT [mm]
TQRB-15-0.39	77.7	25,1	10,3	38,10	9,78
TQRB-15-0.51	127	36,3	13,9	38,10	12,95
TQRB-15-0.51-B	141	32,4	16	38,10	12,95
TQRB-15-1.03	333	83,2	39,2	38,10	26,00
TQRB-15-1.1	353	50,4	28,3	38,10	27,94
TQRB-20-1.14	1200	150	86,6	51,00	29,00
TQRB-24-1-C	600	195	68,2	60,32	25,40
TQRB-30-0.78	777	256	87,4	76,20	19,80
TQRB-34-0.51	883	160	74,1	85,725	12,95
TQRB-34-0.95-A	2048	438	195	85,725	24,40
TQRB-34-1.46	3140	551	271	85,725	36,90
TQRB-37-0.54	1060	210	85,4	92,075	13,72
TQRB-37-0.54-B	1060	158	85,4	92,075	13,72
TQRB-37-0.84	2120	358	156	92,075	21,33
TQRB-37-1.46	4000	681	341	92,456	37,008
TQRB-45-0.56	2300	340	146	114,3	14,22
TQRB-45-0.69-B	3250	542	238	114,3	17,45
TQRB-45-0.69-C	3250	963	238	114,3	17,45
TQRB-45-0.86	4590	715	277	114,3	21,84
TQRB-45-1.08	6510	838	401	114,3	27,28
TQRB-51-0.58	2825	251	180	130,175	14,73
TQRB-51-0.93	2800	1400	422	130,175	23,9
TQRB-51-1.0	4800	1200	490	130,175	25,5
TQRB-51-2.1	10000	1515	716	130,175	53,34

D.C. Limited Angle Brushless Torque Motors

Limited Angle Torque Motors are ideal for compact, limited angular excursion, rotary, closed loop servo applications.

Operating in the system, these units endure a long storage life and a harsh thermal and mechanical environment. All motors consist of a housed stator with a high density winding around a steel core, molded in a special resin. The rotor is build from high-grade samarium cobalt magnets or neodymium, on a stainless steel core.

Advantages

- No Torque Ripple
- High Angular Acceleration
- No Commutation
- Brushless
- Low Profile

PRODUCT CODE	PEAK TORQUE [mNm]	TORQUE SENSITIVITY [mNm/A]	MOTOR CONSTANT [mNm/W]	OUTSIDE DIAMETER [mm]
TQR-10/2-0.35	12,7	17,6	2,9	25,4
TQR-10/4-0.35	12,2	15,5	2,69	25,4
TQR-11/4-0.8	97,2	23,3	9,72	27
TQR-16/2-0.35	36,2	18,1	6,1	40,63
TQR-16/2-0.35-C	74,8	18,7	7,76	40,63
TQR-16/4-0.35	44	20	8,17	40,63
TQR-18/2-0.8-2CH	60	30	10,9	45,4
TQR-19/4-0.53	120	85,7	20,5	48
TQR-27/2-0.65	319	87,5	36,6	69,85
TQR-28/4-0.63	310	155	49	70
TQR-34/8-0.8	1150	250	125	85,09

AC servo motors – BSM series

BSM Series motors are available with high energy Nd-Fe-B magnets - 6 (six) magnetic poles - F Class Insulation - standard feedback system with resolver - winding protection with PTC - Standard protective structure is IP55 class - torque range from 0.1 to 20 Nm - high torque to weight ratios - superior low speed performance - very low inertia.

In this motor range below options are also available:

- shaft with keyway according to DIN 6885
- fail safe brake 24 VDC,
- shaft seal ring,
- additional feedback systems (encoder),
- protection class IP65,
- custom windings,
- special dimensions and configurations.

Sinusoidal Output Transducers – Resolvers

Resolvers which are directly supplied on the rotor winding, used on either limited angle, case in which they are supplied by means of flexible cables or on 360 degrees and, in this case, they are supplied through some collecting rings, as well as resolvers supplied by means of rotary transformer with a constant transformation ratio and the input and output winding terminals on the stator.

Advantages

- Used as an absolute angle transducer,
- resistance to mechanical stresses,
- operation within a wide temperature range.

Outer rotor brushless motor

PARAMETER	SYMBOL	UNITS	VALUE
Nominal Torque	M_n	Nm	9
Peak Torque	M_{max}	Nm	27
Motor Constant	K_M	N/W	1,4
Voltage	V_{DC}	V	600
Nominal Current	I_n	A	8,3
Torque Constant	K_T	Nm/A_{ms}	1,08
Back EMF Constant	K_E	V_{ms}/krpm	67
No-Load Speed		rpm	7000
Number of Poles	N_p		10
Phase Connection			Y
Line-to-Line Resistance	R_L	Ω	0,4
Line-to-Line Inductance	L_L	mH	5,3
Electric Time Constant	T_E	ms	13,2
Insulation Class			H
Thermal Resistance	T_R	°C/W	1,7
External Diameter	OD	mm	170
Stator/Rotor Length	L	mm	28
Motor Length	TL	mm	55
Inertia	J	$kg\ cm^2$	105
Weight	Wt	kg	4,2

The stator is a laminated steel core with a three phase windings. The high energy permanent magnets outer rotor configuration provides a more rigid structure for the permanent magnets and has higher inertia.

Advantages

- High torque due to large air gap radius,
- Stable low speed performance without feedback,
- Lower audible noise with reduced cogging.

Other Product Groups

As the company is established to customize different electrical machines there are many different products that ICPE can offer as following:

- Flat brushless servo motors,
- Precision small brushless motors,
- AC servo motors,
- Linear motors,
- Electric generators,
- 2-D robot tables.

RACING ELECTRIC INSTRUMENT

www.racing.com.tw

RACING ELECTRIC INSTRUMENT IS A TAIWAN COMPANY WITH OVER 20 YEARS EXPERTISE IN MOTOR AND RESOLVER DESIGNING STARTING WITH MAGNETIC DESIGN TO MANUFACTURING. THEY HAVE BEEN ALSO PROVIDING WORLDWIDE MOTOR MANUFACTURERS WITH FRAMELESS KIT MOTORS.

Resolvers

Besides below frameless – bare types resolvers, REI can offer resolvers with sleeves and flanges as a housed assembly.

PRODUCT CODE	"Ø A" mm	"Ø B" mm	"Ø C" mm	SPEED	FUNCTION	PRIMARY WINDING	INPUT-VRMS	FREQ. Hz	ACCURACY	ACCURACY (optional)
RHP-7018	70.00	42.32	18.00	1	RX	R	26	400	6'	3'
RHP-9614Y	96.01	69.60	14.20	1	RX	R	26	2000	6'	3'
RHP-12619Y	126.80	87.76	19.05	1	RX	R	26	2000	6'	3'
RHP-220021	209.53	158.24	21.60	1/32	RX	R	26	400	20'/20''	
RHP-220021A	209.53	158.24	21.60	1	RX	R	26	400	6'	

Torque Motors

PRODUCT CODE	"Ø A" mm	"Ø B" mm	"Ø C" mm	PEAK TORQUE Oz-in	VOLTAGE V	CURRENT AT PEAK TORQUE Amp	KT Oz-in/A	KE V/Rad/S	RESISTANCE Ω	INDUCTANCE mH
RTM-9220M	92.08	63.50	20.43	280.00	28.00	7.00	40.000	0.283	4.00	2.70
RTM-9443	41.65	41.65	39.37	575.00	29.30	7.32	78.600	0.555	4.00	6.40
RTM-8531	85.00	38.00	31.66	564.80	28.00	4.24	86.600	0.612	6.60	14.00
RTM-9432	94.74	41.65	32.66	460.70	28.00	5.21	92.160	0.650	5.37	5.00
RTM-11417	114.30	67.92	17.45	2.40	31.20	6.00	76.140	0.540	5.20	3.00
RTM-156030	155.58	114.30	29.75	960.00	28.00	6.15	155.840	1.110	4.55	3.60
RTM-18018	179.37	136.65	23.60	741.00	31.80	3.31	223.000	1.579	9.60	3.04
RTM-208028	208.28	150.80	27.45	1728.00	28.00	15.78	109.440	0.773	1.77	2.90

Rotary Actuators

MODEL	"Ø A" mm	"Ø B" mm	"Ø C" mm	STROKE Travel, Electrical (deg)	STROKE Travel, Mechanical (deg)	PEAK TORQUE (In-lb)	NO LOAD SPEED (deg/sec)	VOLTAGE (V)	PEAK CURRENT (Amp)	BACKLASH (deg)
RA-150R	68.05	23.00	104	±45	±50	45	225	18~32	2	0.5
RA-105M	68.50	22.86	104	1620	-	45	990	18~32	2	0.5
RA-132	68.50	24.10	132	45	50	90	140	18~32	2	0.5
RA-140Y	120.00	58.00	133	±29	36	200	150	24~32	7	0.5
RA-900	140.00	70.00	195.00	±45	±50	900	150	28	18	0.5

NETZER

www.netzerprecision.com

NETZER PRECISION MOTION SENSORS, ESTABLISHED IN 1998, DESIGNS, MANUFACTURES AND SUPPLIES HIGH QUALITY PERFORMANCE POSITION ENCODERS, BASED ON THE ELECTRIC ENCODER™ PROPRIETARY TECHNOLOGY.

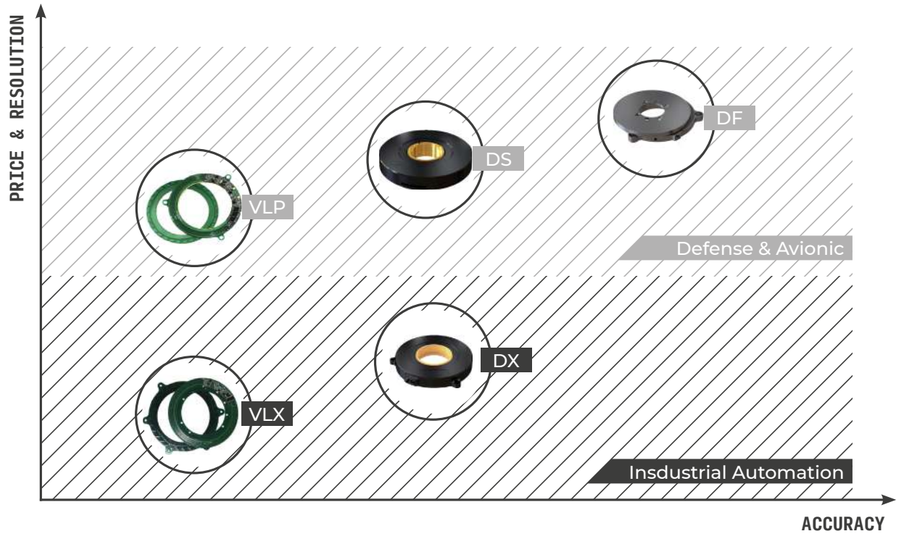
Electric Encoder™ Netzer's world-wide patented, rugged high performance Electric Encoder™ technology, suits a wide variety of applications ranging from space and avionics, through military and defense, to instrumentation and automotive. The product portfolio includes Rotary & Linear absolute or incremental position encoders, with analog or digital outputs.

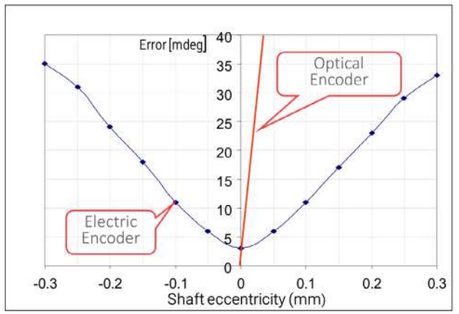
The Non-contact, absolute-position relies on interaction between the measured displacement and an internally shielded, space/time modulated, electric field and offers features unsurpassed by traditional optical and magnetic encoders.

Advantages of Electrical Encoders:

- Simple, robust structure with a virtually no-failure-mechanism,
- Very low weight, inertia, and profile (=<10mm),
- Ring shaped, hollow shaft with a wide range of diameters,
- Precision to 0.001° in selected models,
- Default operation range from -55°C to +125°C,
- Insensitivity to EMI/RFI and magnetic fields,
- Ultra-high-speed options,
- Wide variety of position feedback protocols.

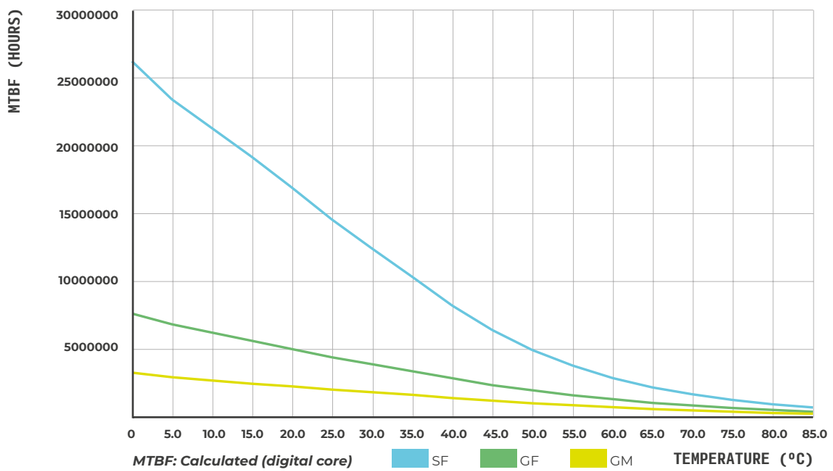
The company has structured its product range based on price performance criteria for different types of applications. For industrial applications DX and VLX products; for defense and avionic applications VLP, DS and DF products are available.





Netzer products are also verified with their high MTBF as shown in below diagram.

T (°C)	MTBF (HOURS)		
	GF (ground fixed)	GM (ground mobile)	SF (space flight)
25°	4,300,000	2,000,000	1,500,000
85°	450,000	300,000	750,000

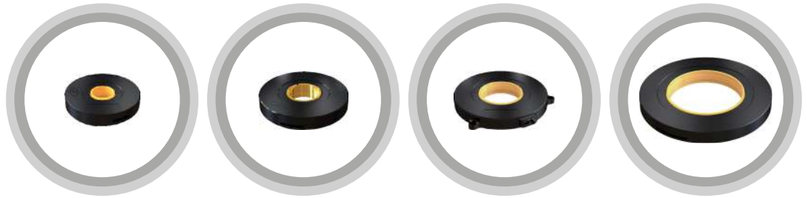


DF, VLX and vlp Series

PRODUCT CODE	OD MM	ID MM	HEIGHT MM	RESOLUTION	ACCURACY	INTERFACE
DF - 60	60	30	10	18 bit	< 0.015°	SSI / BISS - C
DF - 100	100	57	10	18 bit	< 0.015°	SSI / BISS - C
DF - 150	150	110	13	18 bit	< 0.015°	SSI / BISS - C

PRODUCT	OD-MM	ID-MM	HEIGHT-MM	WEIGHT-GR	RESOLUTION	ACCURACY	INTERFACE
VLX-60	60	25	8	14	18-20 bit	±0.010°	SSi / BiSS-C
VLP-60	60	25	6	16	18-20 bit	±0.010°	SSi / BiSS-C
VLP-100	100	48	7	42	18-20 bit	±0.006°	SSi / BiSS-C

DS Series



POLYMER HOUSING	DS - 25	DS - 37	DS - 58	DS -70	DS - 90	DS - 130
FUNCTIONAL						
Angular resolution	17 bits	17 bits	18 bits	19 bits	19 bits	19 bits
Accuracy	<± 25 mdeg°	<± 25 mdeg°	<± 20 mdeg°	<± 15 mdeg°	<± 10 mdeg°	<± 10 mdeg°
Maximum usable speed	3,000 rpm		750 rpm		750 rpm	
Measurement range	Unlimited rotation - 360°					
MECHANICAL						
Total weight	4 gr	10 gr	36 gr	50 gr	50 gr	65 gr
Outer diameter / Inner diameter / Profile	25 / 6 / 7 mm	37 / 10 / 8 mm	58 / 20 / 10 mm	70 / 30 / 10mm	90 / 50 / 10 mm	130 / 90 / 10 mm
Construction material (stator/rotor)	Ultem™ Polymer					

DL Series

- IP65 sealed metal housing
- Max shaft radial force: 100 N

PRODUCT CODE	OD MM	ID MM	HEIGHT MM	RESOLUTION	ACCURACY	INTERFACE
DL - 25	25	Shaft 4 mm		17 bit	< 0.030°	Digital SSI / BISS
DL - 66	95	Shaft 8 mm		18 bit	< 0.030°	Digital SSI / BISS

NANOMOTION

www.nanomotion.com

FOUNDED IN 1992, NANOMOTION LTD. REGISTERED AS A COMPANY AFTER SPENDING A TWO YEAR PERIOD IN THE INCUBATION PROGRAM AT THE TECHNION, ISRAEL'S FOREMOST INSTITUTE FOR SCIENCE.

In 2005, Johnson Electric acquired Nanomotion Ltd to compliment its product line of dc motors with high precision piezo ceramic motors. Based on the principles of piezoelectricity, Nanomotion has designed a series of ultrasonic motors that have no moving parts and that have no extrinsic or intrinsic magnetic fields. In stall mode, the motors have no electrostatic fields as well. Furthermore, Nanomotion also designs and manufactures application specific motors for high volume applications that suit a wide range of micro mechanic specifications.

Edge Motor

Nanomotion's Edge motor is the smallest industrial motor of its kind available in the marketplace today. Providing unlimited linear or rotary motion, the Edge motor offers extensive opportunities in applications that suit a wide range of industries. The Edge motor works with a uniquely designed, compact ASIC-based driver, and can be operated with any servo controller.

Features

- Extremely small dimensions
- Low power consumption
- ASIC drive and control
- Wide dynamic velocity range
- Motor weight of 0.55g
- Excellent move and settle characteristics
- Inherent brake at power off

MOTOR PERFORMANCE SPECIFICATIONS							
	max velocity (mm/sec)	dynamic stall force (mN)	static hold force (mN)	static stiffness (Nμ)	preload on stage (N)	Kf Force constant (mn/volt commanded)	kv force (N • sec/m)
EM1-S-0	120	300	310	.075	1.8	30.5	1.6
EM1-V-0	120	300	310	.075	1.8	30.5	1.6

Note: All motor performance data is based on using Nanomotion ceramic motors and amplifiers

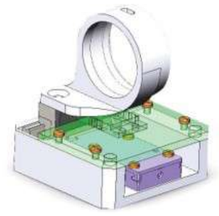
ENVIRONMENTAL

- Maximum Velocity: 120 [mm/sec]
- Dynamic Stall Force: 300 [mN]
- Static Holding Force: 300 to 320 [mN] (reference value)
- Nominal Preload on Stage: 1.65 to 2.0 [N]
- 40.6 mN/VoH command with AB1 driver (+/-15% tolerance)
- Kf: 30.5 mN/VoH command with AB5 driver (+/-15% tolerance)
- Non-energized Stiffness: 0.06 to 0.09 [N/μ]
- Kfv: -1.6307 Nsec/m
- Offset: 2-3 [V] (driver dependent) Attainable
- Resolution: better than 100 nm
- Nominal Lifetime: 20,000 hours under nominal operating conditions

EDGE-4X Motor

The EDGE-4X motor offers a small footprint for unlimited linear and rotary motion. The EDGE-4X provides 1.3N max force and is capable of achieving 200mm/sec maximum velocity.

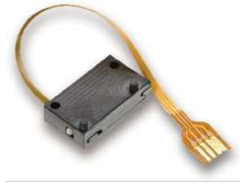
The EDGE-4X can easily adapt to numerous bearing structures to provide high resolution motion control for a wide range of applications in defense optronics, medical and semiconductor markets.



The EDGE-4X motor expands the Nanomotion's product line of low voltage piezo motors, bringing 4 times the force of the Edge motor. The EDGE-4X provides up to 1.3N force with unlimited travel for linear or rotary applications. Continuing to optimize size, weight and power, the EDGE-4X is well suited to:

- Auto Focus & Zoom Requirements
- Pan & Tilt Gimbal Drive
- Optical Image Stabilization Modules

EDGE-4X MOTOR FEATURES



- Small operating footprint
- Wide dynamic velocity range
- Zero backlash
- Holds position at power off
- Silent operation
- Negligible EMI
- Non-magnetic motor

TECHNICAL SPECIFICATIONS	DYNAMIC	ENVIRONMENTAL	ELECTRICAL
Weight/Mass: 2.2g	Driving Force (max): 1.3N	Operation Temperature: -40 °C to 80 °C	Motor Voltage (max): 14VAC
Dimensions: 22.8 x 12.4 x 4.3 mm	Velocity (max): 200mm/sec	Vibrations: 10g rms	Motor Current (max): 250mA AC
		Shock: 350g, 0.8ms half sine	5V DC Drive Circuitry Available

Velox 2.7" IR Payload

HIGH-RESOLUTION PANORAMIC VIEW

- High sensitivity IR stabilized payload at a weight of 365 grams
- Skyport connector and analytics unit 125 gram
- High resolution wide area coverage for enhanced missions
- Superior image stabilization capability
- High speed step and stare, fast response and superior precision
- Low power consumption providing better longer flight time for any application

SPECIFICATIONS		
Thermal IR Camera, LWIR uncooled	Opgal EyeR™ Core VA-XS iFOV: 485μrad	Zoom: X4 Digital FOV Levels: 18° WFOV to 4.5° NFOV F - 35/1.1
Field of Regard	Pan: -174° to +174°	Tilt: +30° to -110°
Video output	VGA at 30fps	Panoramic View of 4 X VGA FOV at 8fps configurable
Environmental	Water Resistant	IP53
Operating Temperature	-20°C to +60°C	
Dimensions	365 grams	"Diameter 70mm (2.7") Height 115 mm (4.5')"
Power Requirement	12.7V, 10W (typ)	max <20W
Control Interface	UART, Ethernet	

PERFORMANCE MOTION DEVICES

www.pmdcorp.com

PERFORMANCE MOTION DEVICES, INC. (PMD) IS A WORLD LEADER IN MOTION CONTROL TECHNOLOGY FOR LIFE SCIENCES, ROBOTICS, AND INDUSTRIAL AUTOMATION. PMD DELIVERS A BROAD RANGE OF ADVANCED ELECTRONIC MOTION CONTROL PRODUCTS INCLUDING INTEGRATED CIRCUITS, DIGITAL AMPLIFIERS, DIGITAL DRIVES, AND BOARDS TO A WORLDWIDE CUSTOMER BASE.

PMD's motto, Motion Control At Its Core, reflects our uniquely powerful strategy of placing motion control ICs at the core of all of our products so that they speak one common motion language. PMD was founded in 1992 and is headquartered near Boston, Massachusetts. We distribute our products in the US and throughout the world and are the motion partner of choice to many of the world's leading manufacturers of laboratory equipment, medical automation, and robotics.

Motion Control At Its core

At the core of every PMD product is a motion control IC that speaks C-Motion, our powerful and easy-to-use motion programming language. With PMD you use a single platform for all your motion development. This helps you streamline your engineering cycles and reduce the time required to build new applications.

Because all PMD products speak the same language, you can start your machine development process with one of our Developer Kits, ION Digital Drives, or Prodigy Motion Boards. This lets you get out of the gate quickly, developing software and exercising your mechanics. If you plan to design a custom control board for your application this development can go on in parallel.

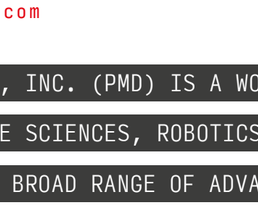
Magellan® Positioning IC family

Atlas® Digital Amplifiers

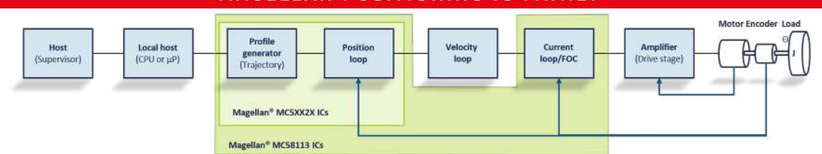
Prodigy® Motion Control Boards

Juno® Velocity & Torque IC family

ION® Digital Drives



MAGELLAN POSITIONING IC FAMILY



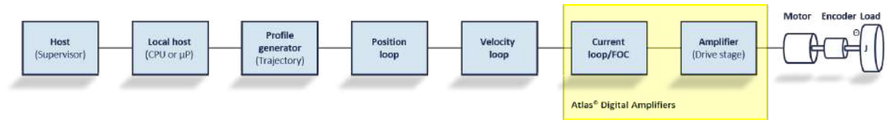
Magellan® MC58113 Ics

- Intelligent, single-axis
- Multi-motor
- Easy, preconfigured motion commands
- Digital current loop
- Onboard memory

Magellan® MC5XX2X ICs

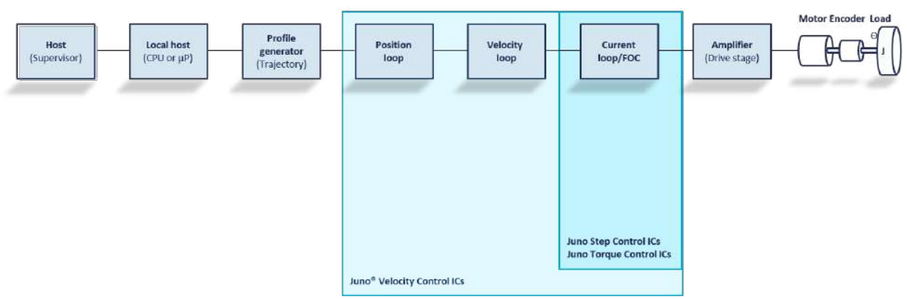
- Intelligent, multi-axis
- Multi-motor
- Easy, preconfigured motion commands
- Custom profile options

ATLAS® DIGITAL AMPLIFIERS



- Highest power density
- Ultra-compact and smart
- Digital current loop
- Multi-motor
- 75W, 250W, 500W
- Up to 120kHz PWM frequencies

JUNO® VELOCITY & TORQUE IC FAMILY



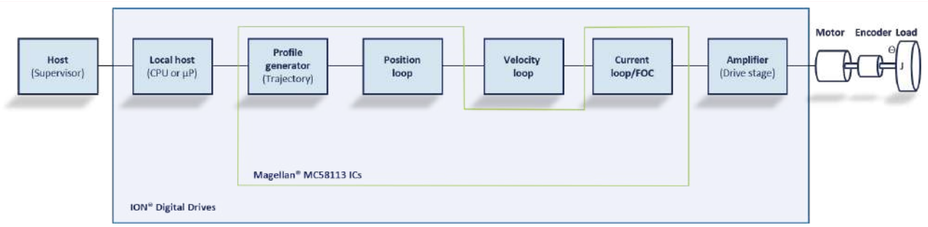
- Ultra-efficient performance
- Four-quadrant control
- Safety features built in

Velocity Control ICs: Sophisticated velocity and torque control of 3-phase brushless DC, DC brush, step motors or multi-motor.

Step Motor Control ICs: State of the art step motor control with pulse and direction or SPI command input.

Torque Control ICs: Ultra precise torque control for 3-phase brushless DC and DC brush motors with direct analog or SPI command input.

ION DIGITAL DRIVES



- Complete single axis drives
- Use right off the shelf
- 500W or 3000W

PANLINK
www.pan-link.cn

PANLINK FOCUSES ON HIGH END SLIP RINGS' R&D AND MANUFACTURING FOR 16 YEARS WITH NEARLY 100 EMPLOYEES AND 3000 SQUARE METERS PRODUCTION AREA.

The company has powerful R&D and management team providing cutting edge design and process technology. Product range is very diverse such as military, wind turbine, heavy machinery, large CT, hybrid slip rings etc. to worldwide clients.

Typical Applications

A slip ring can be used in any electromechanical system that requires unrestrained, intermittent or continuous rotation while transferring power and / or data.

- Defense
- Medical equipment
- Wind power
- Oil exploration
- Environment treatments
- Antenna systems
- Aviation & Navigation
- Robotics
- Port equipment
- Cable reel
- Offshore platform

Slip Ring Solutions

- Support all kinds of signals and communication protocols.
- Electrical, FORJ, RF and media channels can be flexibly combined.
- Experienced in slip ring solutions for used in SIEMENS and other brand servo-drive systems.
- Can provide suitable slip ring solutions for use in various harsh environments.




Communication Protocols

CANopen, EtherCAT, Modbus, PROFIBUS, OPC UA, DeviceNet, EtherNet/IP, PROFINET, ASi Interface, HART Communication Protocol, Camera Link, SuperSpeed+ USB 10Gbps, CAN, CC-Link V2, CAN FD

Customization | EMI immunity | Temp range | High IP | Servo system

Practical Applications


Multi-channel air hybrid slip ring


Multi-channel FORJ


Servo system slip ring


Non-contacting slip ring


Pancake slip ring

Slip Rings for Radar Systems


Multi-function, high speed data and remote transmission.

FEATURES	SPEC
Up to 50M revolutions long life	**Fiber:** SM and MM optional
Multi signals combination – video, RF and network	**Wavelength:** 650 - 1650 nm
EMI immunity and signal leak prevention	**Insertion loss:** <2 dB (typical: <0.5 dB)
Support multi-channel high speed data transfer	**Return loss:** >40 dB (typical:45 dB, 2323 C), >50 dB (MJXA)
Integrate with encoder, can detect rotating speed and angle	**Encoder:** incremental and absolute optional
Compact design and easy mounting	**Pulse:** 512 - 10240

Coaxial / waveguide rotary joints for radar systems

Ultra Miniature Slip Rings for Airborne Fields

Recommended model: PSR-TM10S

PSR-TM10S is the first ultra-miniature slip ring in China market. With 5.9mm dia x 7.62mm flange, it can provide 1~10 circuits power and signal transfer. Stainless steel housing, hard gold contact materials, V-shape groove design, low torque, low wear, ensure sensor and thermocouples etc. weak signals' reliable transmission.

Typical applications

- Aircraft electro-optical pod
- Missile guidance system

Multi-circuits Military Slip Rings

Recommended model PSR-Ms

PSR-Ms series SR are specially designed for space technology experiments. 60-200 circuits optional, can provide power, analog and high speed digital signals transfer. Compliant with EMC and 3D vibration proof, ensure power and signal's stable transmission without interference.

Typical application

- Aerospace 3D simulation motion turntable

Hybrid Fiber-electrical Slip Rings

SPEC	PARAMETERS
Contactless, no friction, long lifetime up to 50M revolutions	**Fiber:** SM or MM
Combine various signals - video, series data, network data	**Wavelength:** 650 - 1650 nm
No signal leakage, EMI immunity	**Insertion loss:** <2 dB (typical: <0.5 dB)
Support multi-channels high speed data transmission	**Return loss: >40dB (typical:45 dB,2323 C), >50 dB (MJXA)**
Small size, light weight, stainless steel, suitable for airborne or marine environments	
With pressure compensation, good sealing, can work in un-dersea 7000m or space environments	

Slip Rings for Medical Equipment

Panlink is the first in China, also the third slip rings manufacturer in the world who is able to R&D and manufacture large diameter CT slip rings.

SPEC
0.5m – 2.7m through bore optional
Operating speed up to 300rpm
Voltage range up to 2,000 VDC
Currents up to 300A
Compliant with 100M and Gigabit Ethernet
Non-contacting high-speed data transmission > 5 Gb/s

WAKEFIELD-VETTE

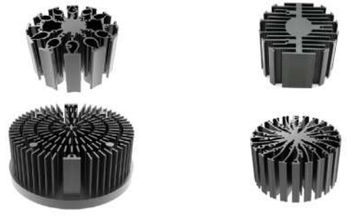
www.wakefield-vette.com

ESTABLISHED SINCE 1957, WAKEFIELD-VETTE HAVE MANY YEARS' EXPERIENCE WITH CUSTOMER AND MARKET DEMANDS. WAKEFIELD-VETTE ADAPT TO CHANGES AND BY INVESTING IN NEW TECHNOLOGIES WHERE NEEDED TO SUPPORT MARKET NEEDS.

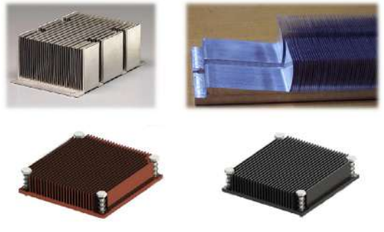
Wakefield-Vette position themselves as an Innovation company with deep roots. Wakefield-Vette's large library of existing products and can directly cross-reference just about every competitors part number with a drop in Wakefield replacement. In most cases Wakefield-Vette is a leader in Price, Minimums and Lead-times and open for product customisation. Constantly releasing new products into distribution.

Product Overview

- BGA and Stamped Heatsinks with Attachments (Wire Clip, Pushpins)
- Fans and Blowers
- LED Heatsinks
- Short Length Extrusions
- Folded Fin Heatsinks / Skived Fin Heatsinks
- Stacked / Zipper Fin Heatsinks
- Bonded Fins
- Liquid Coldplates & Connectors
- Heatpipes, Vapor Chambers & TEC's
- Busbar Kits
- Heat Frames
- Wedgelocks
- Diecast Heatsinks
- Front Panels
- Enclosures
- Standard coldplate and chillers



Heatsinks



Folded Fin / Skived Fin

Wedgelocks / Thermal Accessories

Heatpipes , Vapor Chambers, TEC's

BIGHEAD

www.bighead.co.uk

CHOOSE FROM OUR RANGE OF 400 STANDARD BIGHEADS. OR IF YOU NEED SOMETHING SPECIAL, WE'LL MAKE YOU A CUSTOM DESIGN. WHICHEVER OPTION YOU GO WITH, YOU'LL GET A VERSATILE FASTENER THAT WILL SAVE YOU TIME AND CUT PRODUCTION COSTS. WITH 400 BIGHEADS IN OUR STANDARD RANGE, AND OUR CUSTOM-BUILD SERVICE, WE'VE GOT THE RIGHT FASTENER FOR EVERY SITUATION.

Advantages

- Easy and time-saving.
- Highly versatile.
- Surface bonded with adhesive or fully embedded.
- Ideal for fiber composites, fiberglass, carbon fiber, SMC, BMC and other molding compounds, foam plastics, elastomers, rubbers, laminated, timber, triple corrugated cardboard.
- Fasteners with threaded bolts can be provided with protective polyethylene covers for dirt-proof processing.

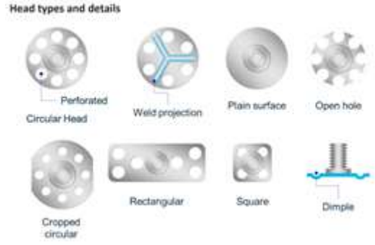
- Lean; 1 component with a 1 step process
- Fast; can bond in 10 secs
- 3.3 to 7.7 MPa typical tensile load
- Coefficient of Variation (CoV) typically <5%
- 240-1000+ hours resistance to red rust

Fasteners

- **Head diameter:** 24mm
- **Thread sizes:** M5 or M6
- **Thread lengths:** 16 or 20mm
- **Material:** Carbon steel

Adhesive

Polyurethane, Epoxy



KANEBRIDGE
www.kanebridge.com

KANEBRIDGE OFFERS MILLITARY-GRADE FASTENERS IN INCH AND METRIC SIZES.

Inch Sizes with NAS and MS standards are available.
NAS1149, NAS1351/MS16996, NAS1352/MS16995, NAS1352/MS16997, NAS620, NAS620, NAS671, NAS671, MS35265, MS35266, MS15795, NAS620, MS24693, MS35275, MS15795, MS51957, MS35338

- **Blind Rivets, Rivet Tools & Threaded Inserts**
  - Stainless, Aluminum, Steel, Copper & Nylon
  - Black Oxide
  - Black Zinc Fasteners
  - Stainless Steel

- **Socket Products**
  - Socket Cap Screws
  - Socket Flat Heads
  - Socket Button Heads
  - Shoulder Screws
  - Socket Set Screws
  - Dowel Pins
  - Pipe Plugs

- **Self-Drilling Screws**
  - 18-8 Stainless
  - 410 Stainless
  - Steel Zinc
  - Steel Zinc Green
  - Steel Zinc Black
  - Steel Black Oxide

INTERCONNECT

RF & MICROWAVE

EMBEDDED SYSTEMS

SENSORS & NAVIGATION

POWER

SYSTEM SOLUTIONS

MECHANICS

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europe

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