saca europe

stabilization (gimbal + turret)

Gimbals are mechanical devices that provide stabilization by counteracting unwanted movement and vibrations, allowing cameras, sensors, or other payloads to remain steady and level. Turrets, on the other hand, enable precise pointing, tracking, and stabilization of mounted equipment, such as weapons systems or surveillance tools. Whether used in military operations, or surveillance, stabilization technology has significantly improved the quality, accuracy, and effectiveness of capturing and tracking objects in motion.

manufacturers

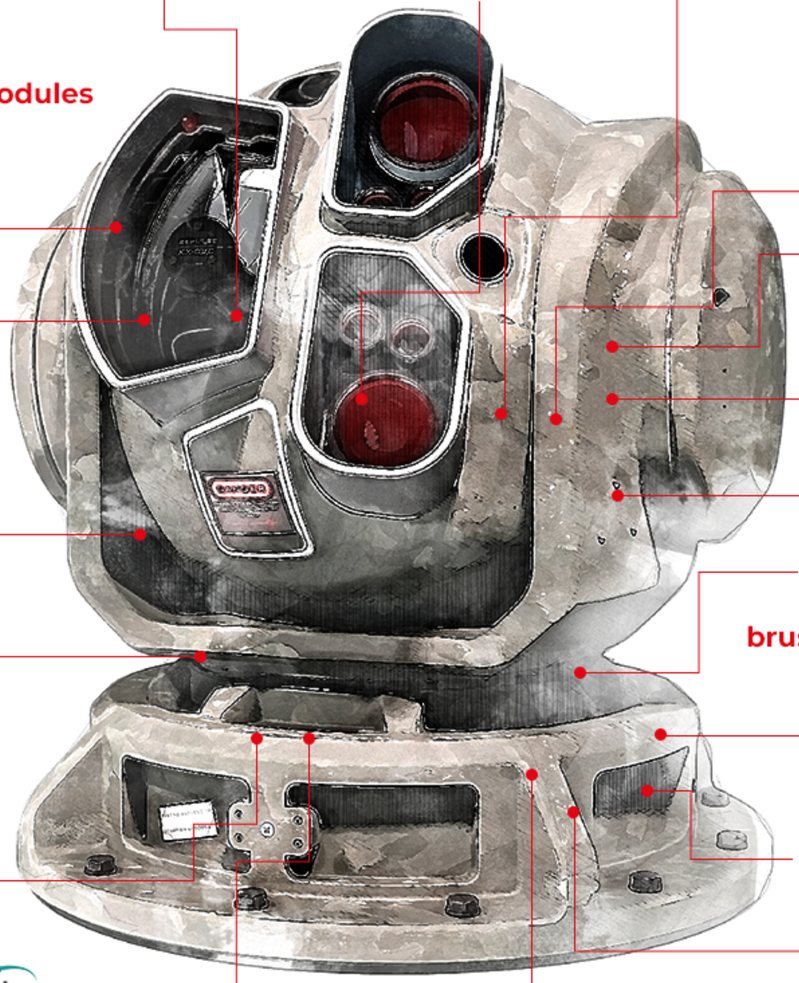
SynQor · MOTIEN TECHNOLOGY · P&P TECHNOLOGY · SAFRAN · Movella · OMNETICS CONNECTOR CORPORATION · TEH

ODU · TELDOR Cables & Systems Ltd. · MICROPOL · EMI SOLUTIONS INC · ADVANCED MOTION CONTROLS · PERFORMANCE MOTION DEVICES · ICPE

REI · PANLINK 奔联技术 · NANOMOTION A Johnson Electric Company · DIAMOND SYSTEMS · Silicon Power · swissbit · Netzer Precision Motion Sensors Ltd

The Netherlands Steenowenweg 5, 5708HN, Helmond
+31 492 218 972

Poland Wspólna 70, Warsaw, Mazowieckie 00-687, PL
+48 221 822 534



TELDOR Cables & Systems Ltd.
ethernet, bus and power cable solutions

Movella™ Bringing meaning to movement
IMU, VRU, AHRS, INS

IEH
board to board hyperboloid connectors

OMNETICS CONNECTOR CORPORATION
micro-D, nano-D, hybrid connectors

DIAMOND SYSTEMS
jetson carrier board modules

SAFRAN
IMU/GYRO

MOTIEN TECHNOLOGY SynQor
DC/DC converters

REI
voice coil actuators

EMI SOLUTIONS INC P&P TECHNOLOGY
EMC/EMI shielding solutions

ODU
miniature circular connectors

ICPE
brushed torque motors

MICROPOL
fiber optic solutions

PERFORMANCE MOTION DEVICES
MOTION CONTROL AT ITS CORE
motion control chips

PANLINK 奔联技术
SDI/HDI sliprings

NANOMOTION LTD.
piezo motors

Netzer Precision Motion Sensors
DS family encapsulated encoder

swissbit® SP Silicon Power
memory solutions

ADVANCED MOTION CONTROLS
motor drivers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DC/DC converters
REI
voice coil actuators
EMI SOLUTIONS INC
P&P TECHNOLOGY
EMC/EMI shielding solutions
iCPE
brushed torque motor
MICROPOL
fiber optic solutions
PERFORMANCE MOTION DEVICES
MOTION CONTROL AT ITS CORE
motion control chips
PANLINK 奔联技术
SDI/HDI sliprings
ODU
miniature circular connectors
NANOMOTION LTD.
piezo motor
Netzer
Precision Motion Sensors
DS family encapsulated encoder
swissbit
SP Silicon Power
memory solutions
ADVANCED MOTION CONTROLS
motor driver

SYNQOR

www.synqor.com

COMPANY OVERVIEW

SynQor® is a leading supplier of power conversion solutions to the military, industrial, rail transportation, commercial avionics, medical and telecom/datacom 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.

MCOSTS DC-DC CONVERTER

MCOTS PRODUCT FEATURES

- High efficiency, up to 95% at full rated load current
- Fixed frequency switching provides predictable EMI
- No minimum load requirement
- Rugged design for harsh environments
- Full Feature option on some models
- Flanged baseplate available
- Industry standard pin-out configurations and
- standard footprints.
- Available: High-capacitance option for very large
- output capacitance and extreme transient applications
- -55 °C to +100 °C Operating Temperature

COMPLIANCE FEATURES

MilCOTS converters with MilCOTS filters are designed to meet:

- MIL-HDBK-704
- RTCA/DO-160 Section 16, 17, 18
- MIL-STD-1275
- MIL-STD-461
- DEF-STAN 61-5 (part 6)/(5, 6)

PROTECTION/CONTROL FEATURES

- Input under-voltage lockout
- Output current limit and short circuit protection
- Active back bias limit
- Output over-voltage protection
- Thermal shutdown (not on DM Package Size)
- On/Off control referenced to input side
- (ON/OFF control islolated in Full Bricks)
- Remote sense for the output voltage
- Digital Output Current Sharing (HZ & HY only)
- Output voltage trim range of: **+10% to -20%**
  (Half-Brick Zeta/Yota) **+10% to -50%**
  (Quarter-Brick Exa) **+10% to -50%**
  (Sixteenth Brick) **+10% to -10%**

INQOR DC-DC CONVERTER

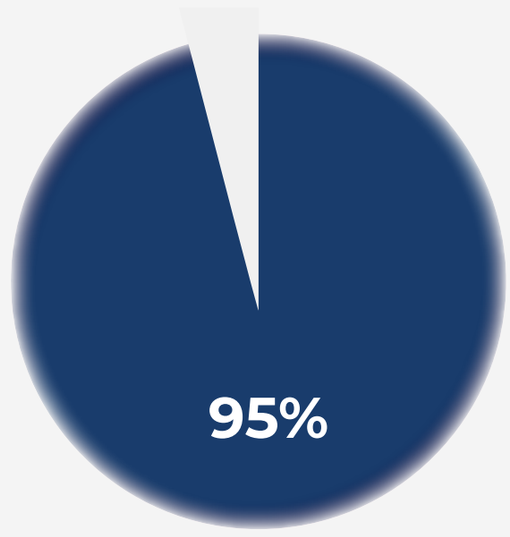
OPERATIONAL FEATURES

- 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

PROTECTION/CONTROL FEATURES

- Input under-voltage lockout
- Output current limit and short circuit protection
- Active back bias limit prevents damage to
- converter from external load induced pre-bias
- Digital output current sharing (Half Brick Zeta only)
- Output over-voltage protection
- Thermal shutdown
- Trimmable output voltages

EFFICIENCY



Continuous Input	34-160 V
Output	1.8-48 V
Max Power	120 W
Reinforced Isolation	3000 Vdc
Quarter Brick	DC/DC Converter

ISOLATED DC-DC CONVERTERS

12 VDC INPUT (9-22 VDC INPUT RANGE, TRANSIENT 25 V)

	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V
Half Brick	HPC	60 A 108 W	V 50 A 165 W	36 A 180 W		15 A 180 W	12 A 180 W	7.5 A 180 W	6.5 A 182 W		4.5 A 180 W	3.7 A 178 W
	HTC	50 A 90 W	40 A 132 W	28 A 140 W		12 A 144 W	9.5 A 143 W	6 A 144 W	5 A 140 W		3.5 A 140 W	3 A 144 W
Quarter Brick	QTC	40 A 72 W	30 A 99 W	20 A 100 W	14 A 98 W	8 A 96 W	7 A 105 W	4 A 96 W		3 A 90 W		2 A 96 W
	QGC	30 A 54 W	20 A 66 W	15 A 75 W	10 A 70 W	6 A 72 W	5 A 75 W	3 A 72 W		2.4 A 72 W		1.5 A 72 W

24 VDC INPUT (18-36 VDC INPUT RANGE, TRANSIENT 50 V)

	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V	50 V
Half Brick	HZC			60 A 300 W		42 A 504 W	34 A 510 W	21 A 504 W	18 A 504 W		12.5 A 500 W		10 A 500 W
	HEC								14 A 392 W				8 A 400 W
	HPC	60 A 108 W	50 A 165 W	40 A 200 W		8 A 216 W	8 A 216 W	9 A 216 W	7.5 A 210 W		10 A 500 W	4.5 A 216 W	
	HTC	50 A 90 W	40 A 132 W	30 A 150 W		13 A 156 W	10 A 150 W	6.5 A 156 W	5.5 A 154 W		4 A 160 W	3.3 A 158 W	
Quarter Brick	QTC	40 A 72 W	30 A 99 W	20 A 100 W	14 A 98 W	8 A 96 W	8 A 120 W	5 A 120 W		4 A 120 W		2.5 A 120 W	
	QGC	32 A 58 W	25 A 83 W	18 A 90 W	13 A 91 W	7.5 A 90 W	6 A 90 W	3.7 A 89 W		3 A 90 W		1.8 A 91 W	
	QMC									2 A 60 W		1.2 A 58 W	
Sixteenth Brick	SGC		15 A 50 W	10 A 50 W	7 A 49 W	4 A 48 W	3.3 A 48 W	2 A 48 W	1.8 A 50 W			1 A 48 W	

48 VDC INPUT (34-75 VDC INPUT RANGE, TRANSIENT 100 V)

	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V	50 V
Half Brick	HZC			60 A 300 W		50 A 600 W	40 A 600 W	25 A 600 W	21.5 A 602 W		15 A 600 W		12 A 600 W
	HPC	60 A 108 W	60 A 198 W	46 A 230 W		21 A 252 W	17 A 255 W	10.5 A 252 W	9 A 252 W		6.3 A 252 W	5.2 A 250 W	
	HTC	50 A 90 W	45 A 149 W	34 A 170 W		16 A 192 W	13 A 195 W	8 A 192 W	7 A 196 W		5 A 200 W	4 A 192 W	
Quarter Brick	QTC	40 A 72 W	30 A 99 W	25 A 125 W	20 A 140 W	12 A 144 W	10 A 150 W	6 A 144 W		5 A 150 W		3 A 144 W	
	QGC	32 A 58 W	25 A 83 W	21 A 105 W	15 A 105 W	9 A 108 W	7 A 105 W	4.5 A 108 W		3.5 A 105 W		2.2 A 106 W	
Sixteenth Brick	SGC	28 A 50 W	15 A 50 W	10 A 50 W	7 A 50 W	4.1 A 50 W	3.3 A 50 W		1.8 A 50 W				

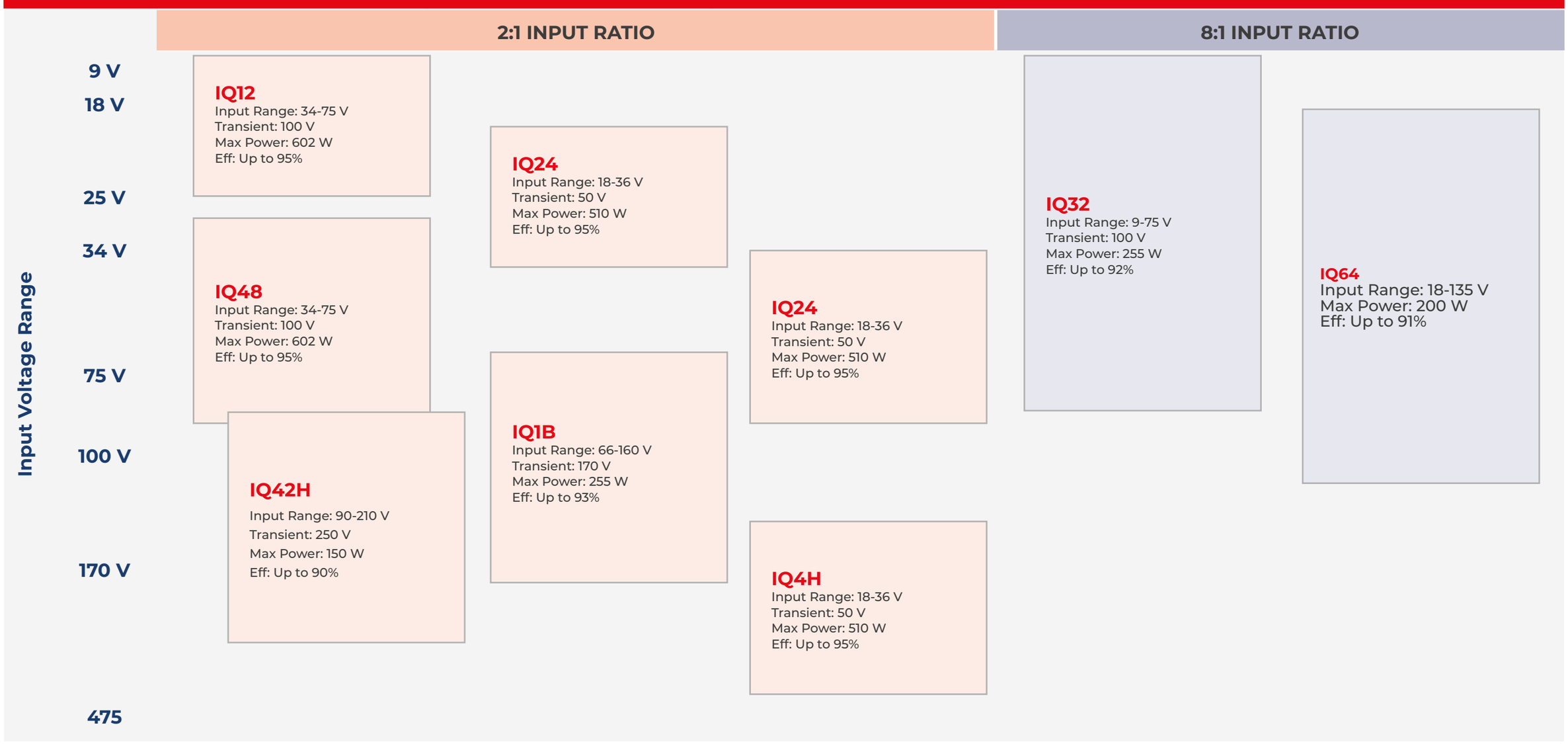
72 VDC INPUT (42-110 VDC INPUT RANGE)

	VOUT	1.8 V	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V
Half Brick	HPC	60 A 108 W	60 A 198 W	46 A 230 W		21 A 252 W	17 A 255 W	10.4 A 250 W	9 A 252 W		6.3 A 252 W	5.2 A 250 W
	HTC	50 A 90 W	45 A 149 W	34 A 170 W		16 A 192 W	13 A 195 W	8 A 192 W	7 A 196 W		5 A 200 W	4 A 192 W
Quarter Brick	QTC		30 A 99 W	25 A 125 W	20 A 140 W	12 A 144 W	10 A 150 W	6 A 144 W		5 A 150 W		3 A 144 W
	QGC		5 A 83 W	20 A 100 W	15 A 105 W	9 A 108 W	7 A 105 W	4.5 A 108 W		3.5 A 105 W		2 A 96 W

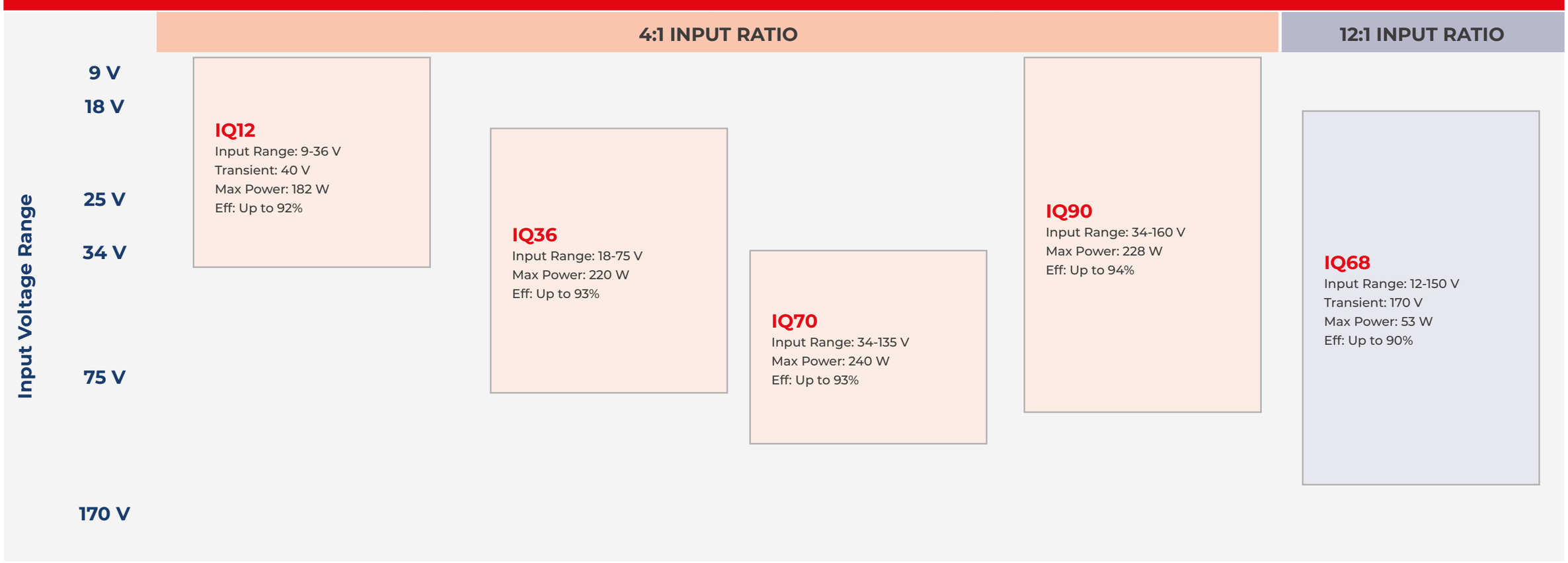
110 VDC INPUT (66-160 VDC INPUT RANGE, TRANSIENT 170 V)

	VOUT	3.3 V	5 V	7 V	12 V	15 V	24 V	28 V	30 V	40 V	48 V
Half Brick	HPC	60 A 198 W	48 A 240 W		21 A 252 W	17 A 255 W	10 A 240 W	9 A 252 W			
	HTC	45 A 149 W	34 A 170 W		16 A 192 W	13 A 195 W	8 A 192 W	7 A 196 W			
Quarter Brick	QTC	30 A 99 W	25 A 125 W	20 A 140 W	12 A 144 W	10 A 150 W	6 A 144 W		5 A 150 W		
	QGC	23 A 76 W	18 A 90 W	15 A 105 W	9 A 108 W	7 A 105 W	4.5 A 108 W		3.5 A 105 W		

PRODUCT FAMILY MATRIX



PRODUCT FAMILY MATRIX



Input Voltage	Mode	Output Voltage	Package Size	Series	Thermal Design	Maximum Current	Options Description:		
							Enable Logic	Pin Length	Feature Set
IQ	**12:** 9-22 V **18:** 9-36 V **24:** 18-36 V **32:** 9-75 V **36:** 18-75 V **48**: 34-75 V **64**: 18-135 V **68**: 12-150 V **70**: 34-135 V **72**: 42-110 V **90**: 34-160 V **1B**: 66-160 V **2H**: 90-210 V **4H**: 180-425 V	**012:** 1.2 V **015**: 1.5 V **018**: 1.8 V **025**: 2.5 V **033**: 3.3 V **050**: 5 V **070**: 7 V **120**: 12 V **150**: 15 V **240**: 24 V **280**: 28 V **300**: 30 V **400**: 40 V **480**: 48 V **500**: 50 V	**S:** Sixteenth Brick **Q**: Quarter Brick **H**: Half Brick **F**: Full Brick	**K:** Kilo **M:** Mega **G:** Giga **T:** Tera **P:** Peta **E:** Exa **Z:** Zeta	**C:** Encased **D:** Encased, Non-threaded Baseplate **V:** Encased, Flanged Baseplate	**60:** 60 A **50**: 50 A **30**: 30 A **10**: 10 A **06**: 6 A **02**: 2 A (not all shown)	**N:** Negative	**K**: 0.110” **N**: 0.145” **R**: 0.180” **Y**: 0.250”	**S**: Standard (1/8 & ¼ only) **C**: Current monitor output/ trimmable current limit (1/8 & ¼ only) **F**: Current share/ trimmable current limit (half brick only)

TECHNOLOGY

www.motien.com.tw

COMPANY OVERVIEW

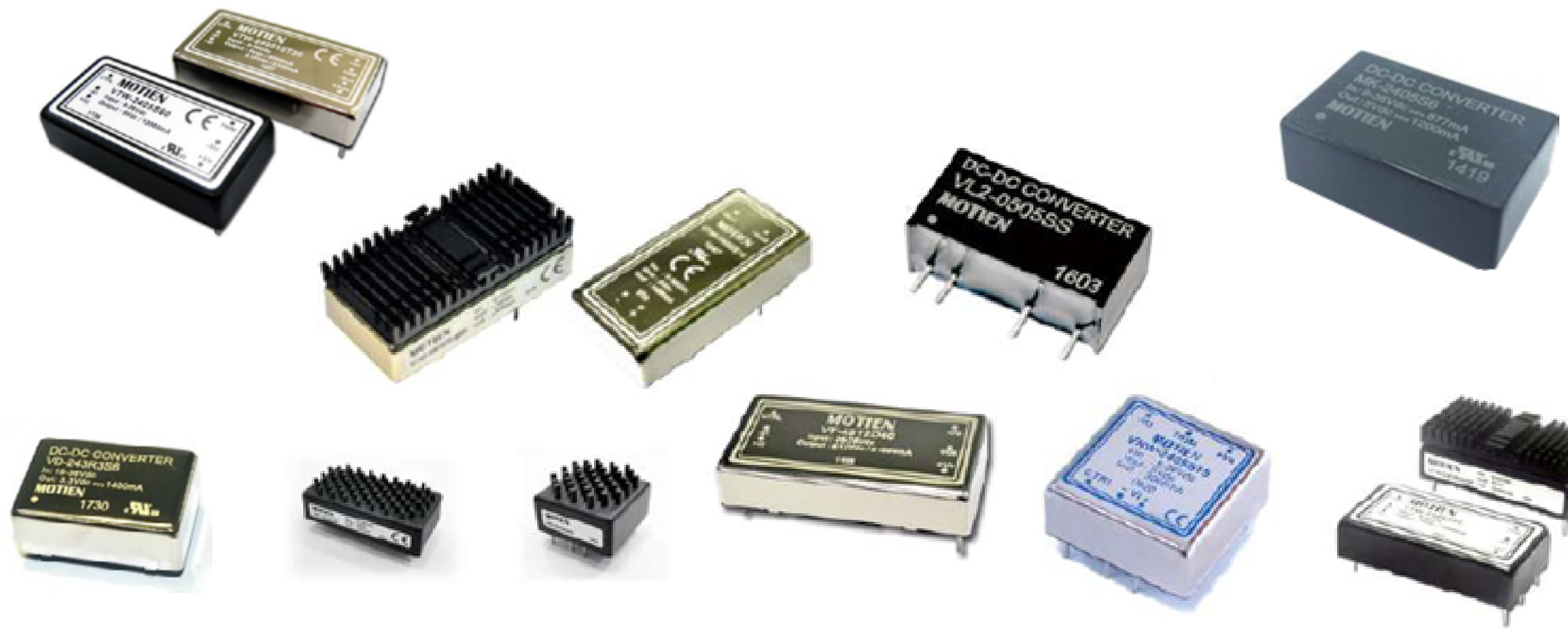
MOTIEN Technology is the professional and leading manufacturer of power solution since the establishment on 1998, with the great efforts and continually improvement for decades on power supplies, the brand MOTIEN has become well known and a symbol of quality and preferred & trusted DC power source.

Motien has 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.

GENERAL SPECIFICATION

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

PRODUCT GROUPS



RAILWAY SERIES

SMD SERIES

LED DRIVERS

ISOLATED DC/DC CONVERTERS

- SIP-Packages
- DIP-Packages

NON - ISOLATED DC/DC CONVERTERS

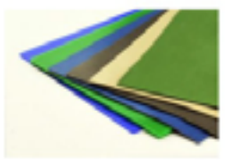
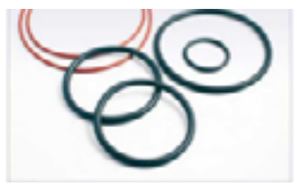
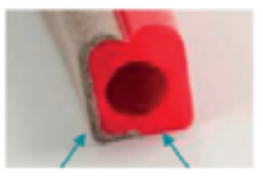
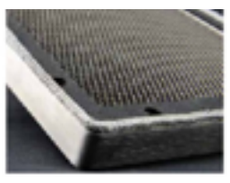
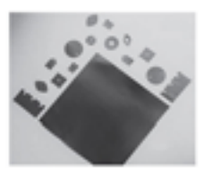
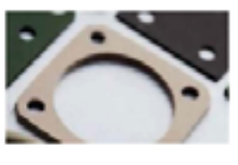
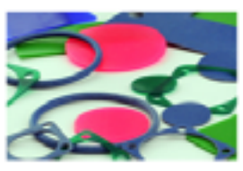
- SIP-Packages
- SMD-Packages

P&P TECHNOLOGY

www.p-p-t.co.uk

COMPANY OVERVIEW

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	S /s
			
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

SAFRAN SENSING TECHNOLOGIES NORWAY

www.safran.com

COMPANY OVERVIEW

Safran 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.

Safran 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)

STIM277H

STIM277H 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 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.

- Hermetic 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]

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
- 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

STIM380H

STIM380H is a small, tactical grade, low weight, high performance non-GPS aided Inertial Measurement Unit (IMU) in a hermetic package 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.

STIM380H is a cost-effective ITAR free solution for systems that only had FOGs as an alternative when reaching for the performance level of that the STIM380H can offer.

- Miniature laser welded hermetic package
- Aluminum casing, 6082-T6 alloy - SurTec 650 surface treated
- ITAR-free
- Low noise and bias instability
- Excellent performance in vibration and shock environments
- 6 axes offered in same package
  - Electronically calibrated axis alignment
- Gyros based on Safran ButterflyGyro™
  - Single-crystal silicon technology
  - No intrinsic wear-out effects
- High stability accelerometers
- PPS output
- Output-signal with programmable timing (CRS)
- Multi-module transmission
- Insensitive to magnetic fields
- Full EMI compliance
- Digital interface, RS422
- Fully configurable
- Continuous self-diagnostics
- RoHS compatible
- Delivered in dust free clean-room packaging

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

Movella
Bringing meaning to movement

MOVELLA

www.movella.com

COMPANY OVERVIEW

Movella 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-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-RTK 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

REAL-TIME SENSOR FUSED DATA

	IMU (1)	VRU (2)	AHRS (3)	GNSS/INS (7)	RTK-enabled GNSS / INS (8)	RTK-enabled VINS
	Intertial Measurement Unit	Vertical Reference Unit	Attitude and Heading Reference System	GNSS / GPS enabled Intertial Navigation System	Real Time Kinematics	Attitude and Heading Reference System
Gyroscope	Roll	Roll	Roll	Roll	Roll	Roll
Accelerometer	Pitch	Pitch	Pitch	Pitch	Pitch	Pitch
Magnetometer	Unref. Yaw	Unref. Yaw	Unref. Yaw	Unref. Yaw	Unref. Yaw	Unref. Yaw
Barometer				3D Position	cm-level 3D Position	3D Position
GNSS Receiver				3D Velocity	3D Velocity	3D Velocity
				GNSS Time	GNSS Time	GNSS Time
RTK Corrections						
Camera (B&W) & Wheel Odometry (External Source)					Long term dead-reckoning	

OMNETICS
CONNECTOR CORPORATION

OMNETICS

www.omnetics.com

COMPANY OVERVIEW

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.

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)	MILDTL-32139 QPL

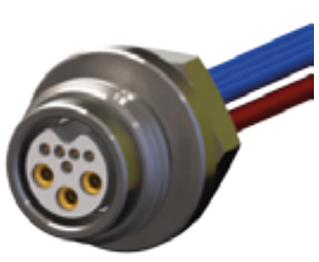
LATCHING NANO-D

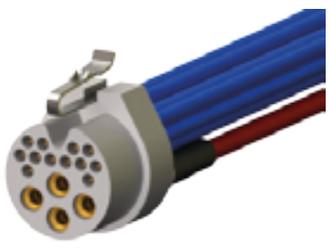
			
Surface Mount (AA)	Flex Mount (FF)	Straight Thru-Hole (DD)	Pre-Wired (WD)

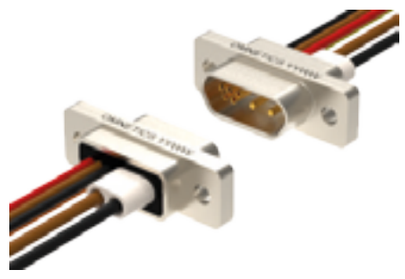
LOW PROFILE MICRO-D

				
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

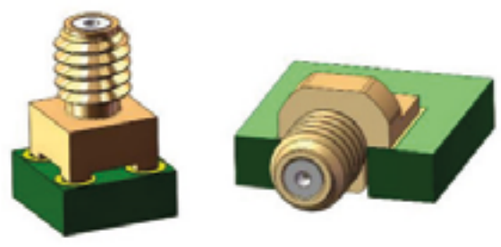






Nano Coax Connectors

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.

Discrete Wired (WD)

Right Angle Thru-Hole (H1)

Right Angle Thru-Hole (R2)

Solder Cup (SS)

Straight Thru-Hole (S2)

IP68 Nano Circulars

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.

Full Keyed Breakaway (M)

Full Keyed Breakaway (F)

Ratcheting - RMCP

Ratcheting - RMCS

Micro Strip Connectors

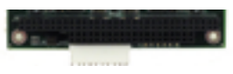
XT						3-30VDC					
IR104-PBF	PC/104					20 In 3-24V	20 SPST	30VDC/5A			

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

Nano Strip Connectors

EMM-8EL-XT

EMM-8P-XT



EMM-8PLUS-XT

EMM-4M-XT

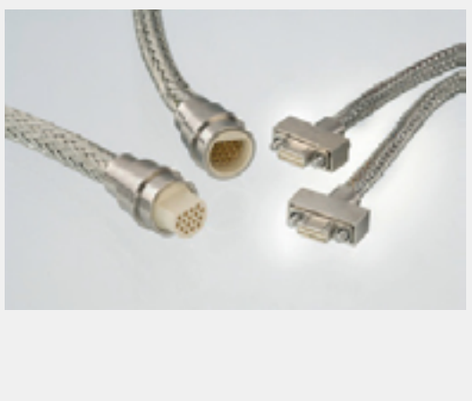
2-60 positions for single row
2-48 for dual row

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.

SERIAL I/O											
Product	**Form Factor**	**#RS-232**	**Max Rate**	**#RS-422**	**Max Rate**	**#RS-485**	**Max Rate**	**Isolated**	**Protocol**	**Address**	**GPIO**

Capabilities

LATCHING NANO-D	EMI SHIELDING	CUSTOM HARNESSING	CUSTOM METAL SHELL
			

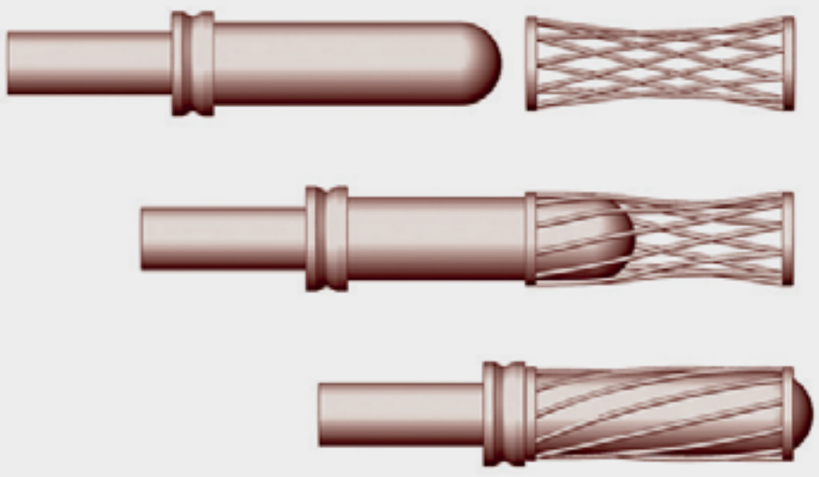
IEH

www.iehcorp.com

COMPANY OVERVIEW

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.

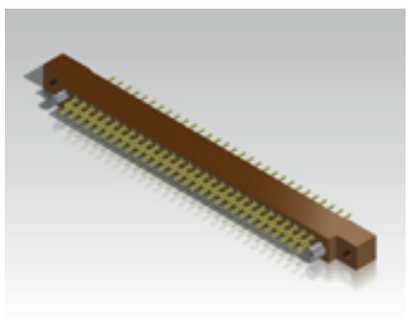
Hyperboloid Technology



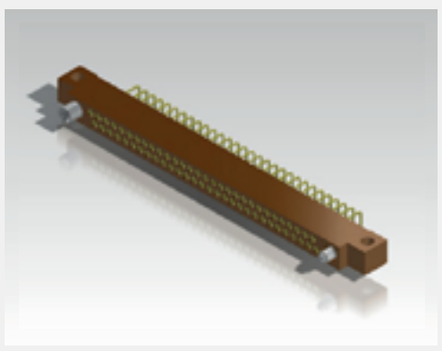
Utilized in all of our receptacle connectors, this unique design offers superior capability in every critical parameter of connector performance:

- 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

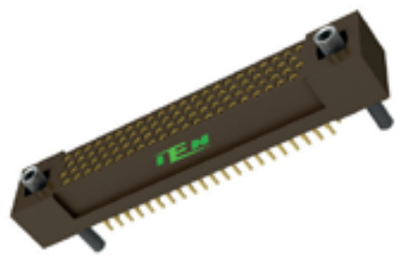
PCB CONNECTORS



Type N Circulator from
300MHz to 10 GHz



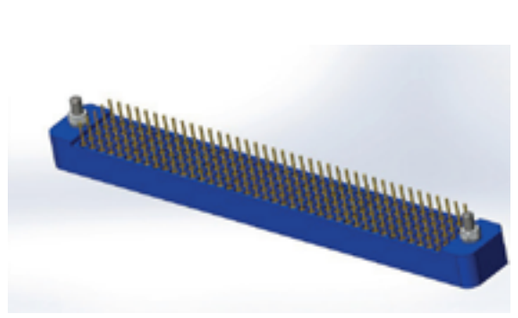
HRM Series - .075" centers
2 & 3 row 10-206pos
M55302 /190 /193



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

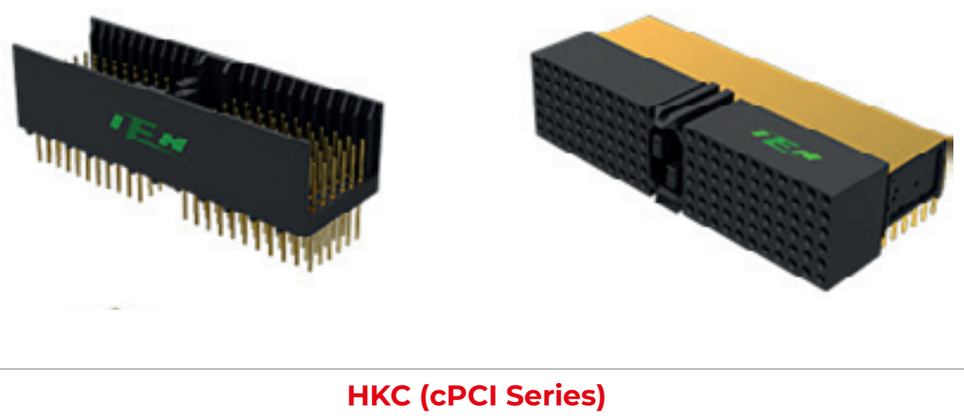
HGC/HGS Series
Low-Profile for parallel boards
22-90pos

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)

- 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

HKX (VPX-Compatible Series)

- 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

ODU

www.odu.de

COMPANY OVERVIEW

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.

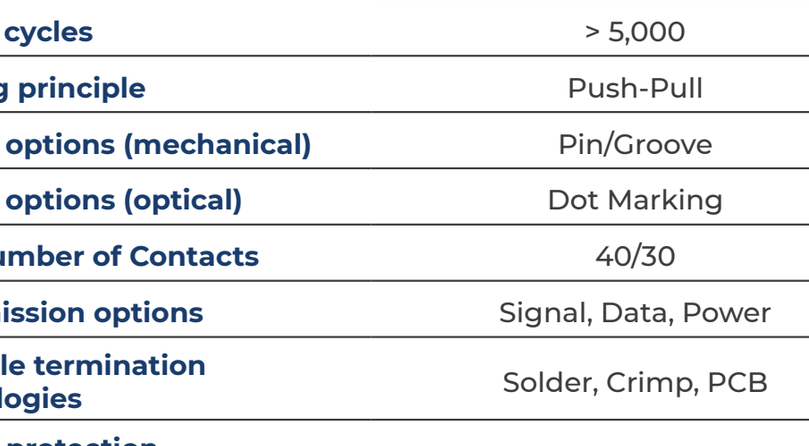
ODU AMC®

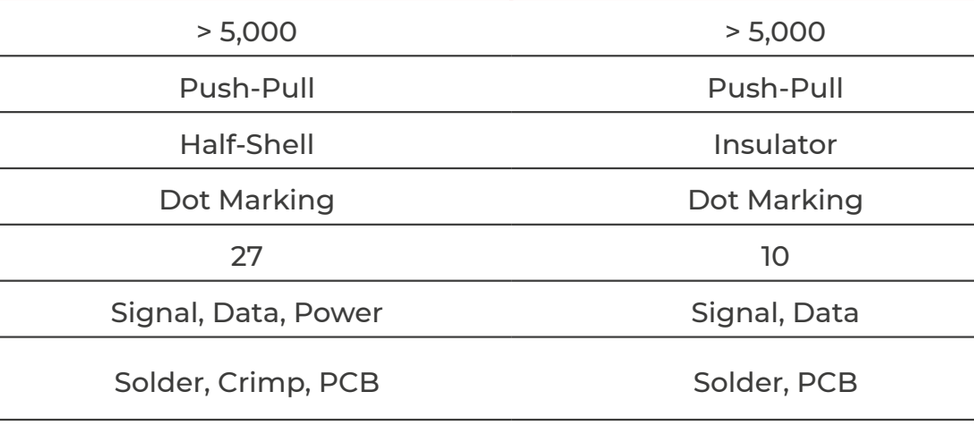
	ODU AMC® BREAK-AWAY	ODU AMC® PUSH-PULL	ODU AMC® EASY-CLEAN	ODU AMC® HIGH-DENSITY	ODU THREADED CONNECTOR
Mating cycles	Up To 5,000	Up To 5,000	Up To 5,000	Up To 5,000	Up To 2,000
Locking principle	Break-Away	Push-Pull	Break-Away	Break-Away	Screw Locking
Coding options (mechanical)	Pin/Groove	Pin/Groove	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®

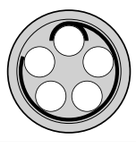
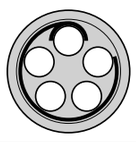
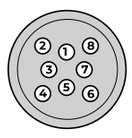
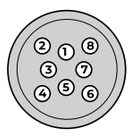
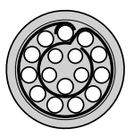
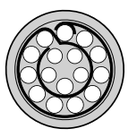
	ODU MINI-SNAP® PIN AND GROOVE CODING	ODU MINI-SNAP® HALF-SHELL CODING	ODU MINI-SNAP® CODING USING SPLIT INSULATORS
Mating cycles	> 5,000	> 5,000	> 5,000
Locking principle	Push-Pull	Push-Pull	Push-Pull
Coding options (mechanical)	Pin/Groove	Half-Shell	Insulator
Coding options (optical)	Dot Marking	Dot 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

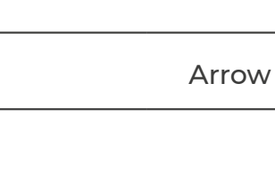
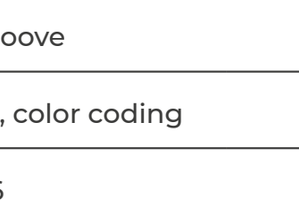
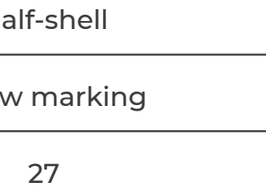
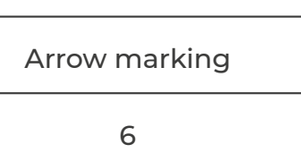
	G80L0Q–PU5RF00–00V0	G80L0Q–PU5QF00–00V0	G81L0Q–PD8RC00–00V0	G81L0Q–PD8QC00–00V0	G82L0Q–P16RC00–00V0	G82L0Q–P16QC00–00V0
⌀ Panel cut-out	9.1 mm + 0.1	9.1 mm + 0.1	12.1 mm + 0.1	12.1 mm + 0.1	15.1 mm + 0.1	15.1 mm + 0.1
Number of contacts	5	5	8	8	16	16
						
Contact style	Pin	Socket	Pin	Socket	Pin	Socket
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.

TELDOR Cables & Systems Ltd.

TELDOR

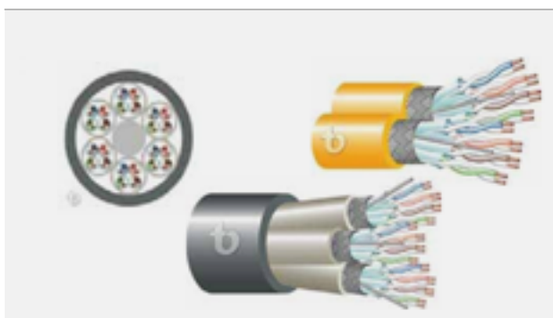
www.teldor.com

COMPANY OVERVIEW

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.

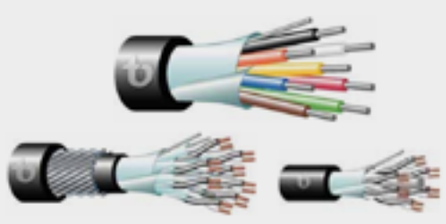
The factory was established in 1966 at Kibbutz Ein-Dor, in Israel's Lower Galilee. TELDOR is a leading manufacturer in the development and production of advanced electronic, FiberOptic and data communication cables, as well as outside plant Telecom cables.

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

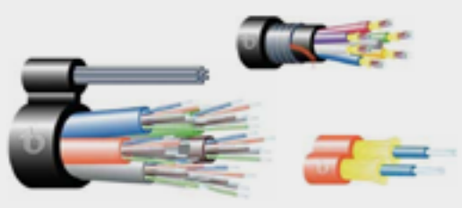


Indoor and Outdoor Cables for the Process Industry, Petrochemical Industry, Unshielded and Shielded, Armored and Unarmored for Automation, Bus Cable and Hazardous Areas.

Signal & Control Cable Solutions

Instrumentation, Thermocouple, Bus Cables and Security Cables.

Optical Cable Solutions

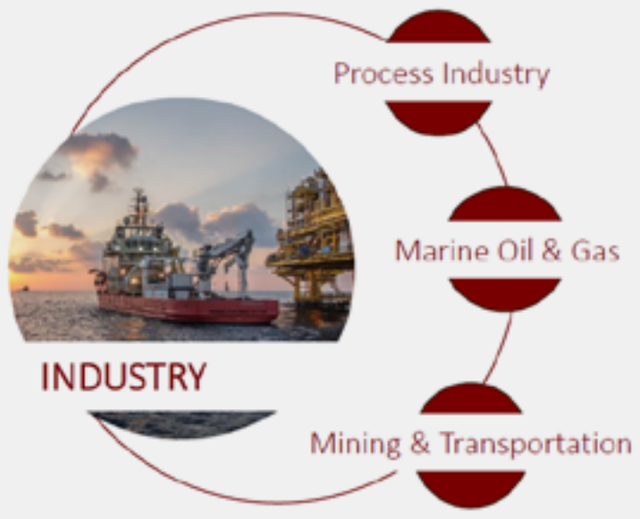


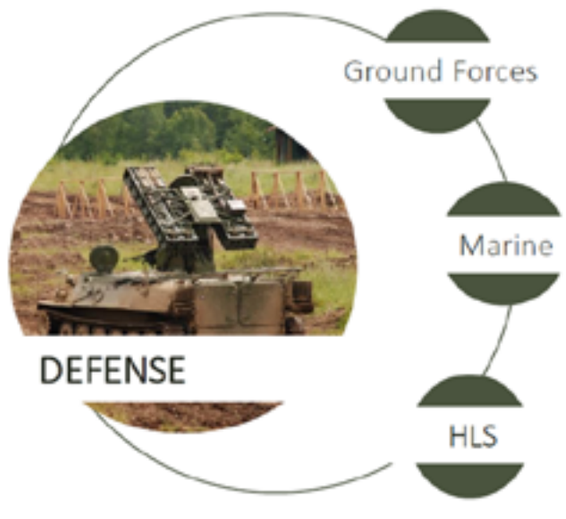
Optical Cables for Indoor, Outdoor, Distribution, Breakout, Tactical and Jumper Applications.
Rus Approved.

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

- **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

MICROPOL

www.micropol.com

COMPANY OVERVIEW

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: 650 - 1650 nm
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 Lenght: 11ms, half sine at 35g Numbers of axis: 3 (x, y, z)

ENVIRONMENTAL

Operating Temperature: -550C to +850C, +1000C optional
Water Immersion: 10 m water depth-mated
Air Pressure : <25kPa -550C 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 -400C to +850C
- Standard configuration up to 500 meters (can be adjusted
- according to specifications)

Backpack Cable Drum

Cable

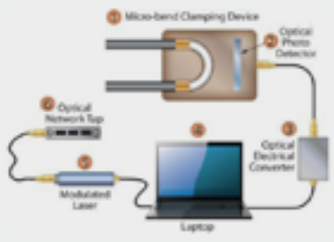
- For heavy duty use
- 1–384 fiber
- Operating temperatur -55°C to +85°C
- Vertical installation
- High flex, up to 15 million bends
- Rodent resistant

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

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

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

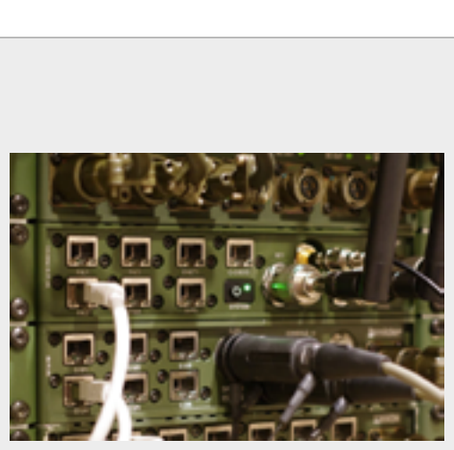
Attenuator

- 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

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

Custom Solutions



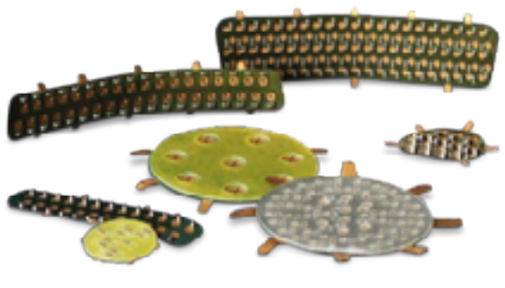
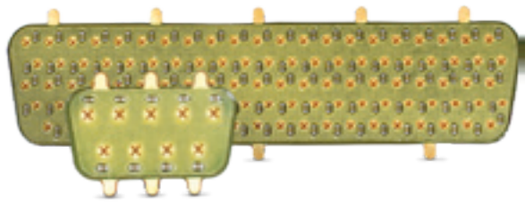
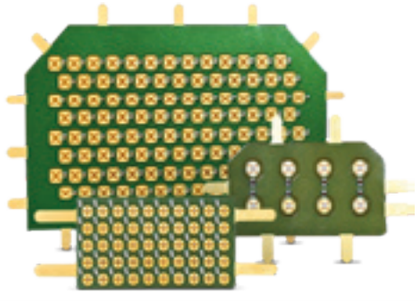
EMI SOLUTIONS INC.

www.4emi.com

COMPANY OVERVIEW

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

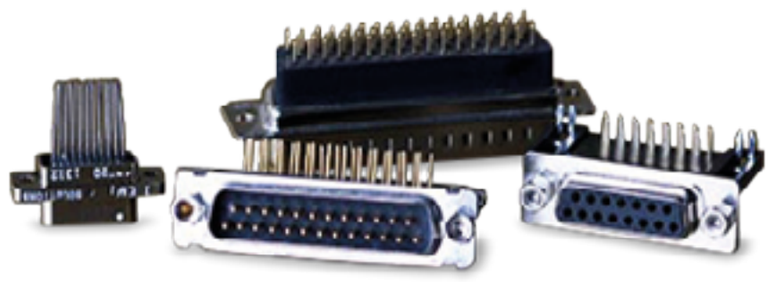
Planar Arrays or Discoidal Capacitors

- 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

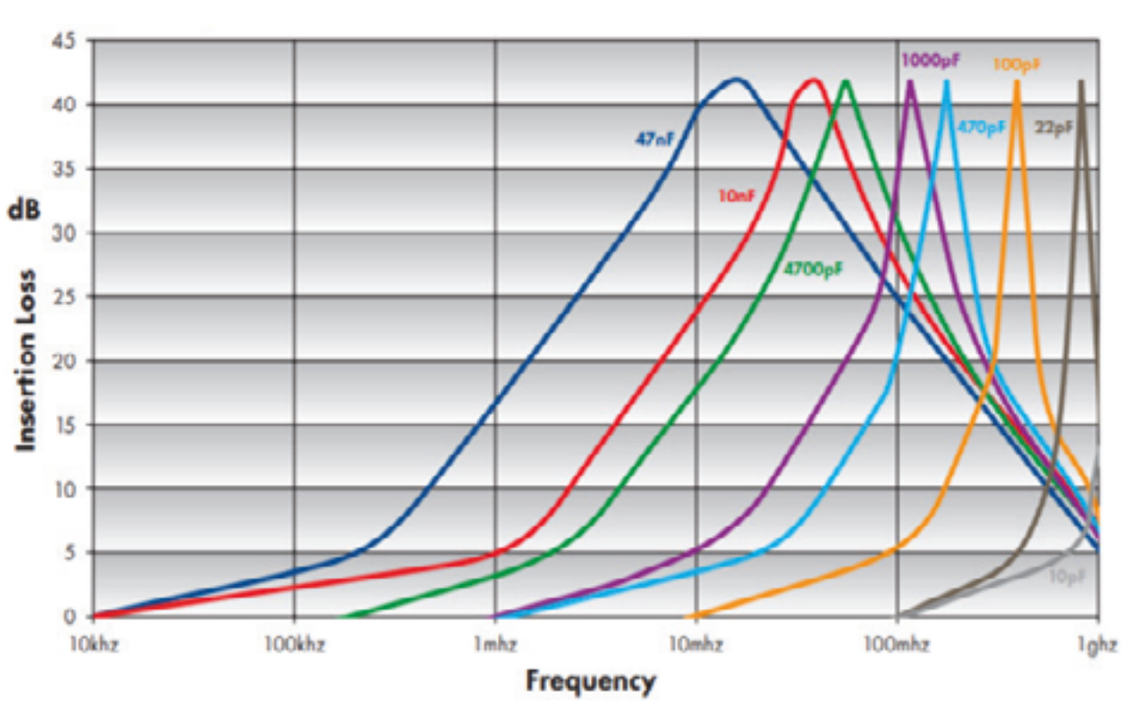
C & Pi Filters

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

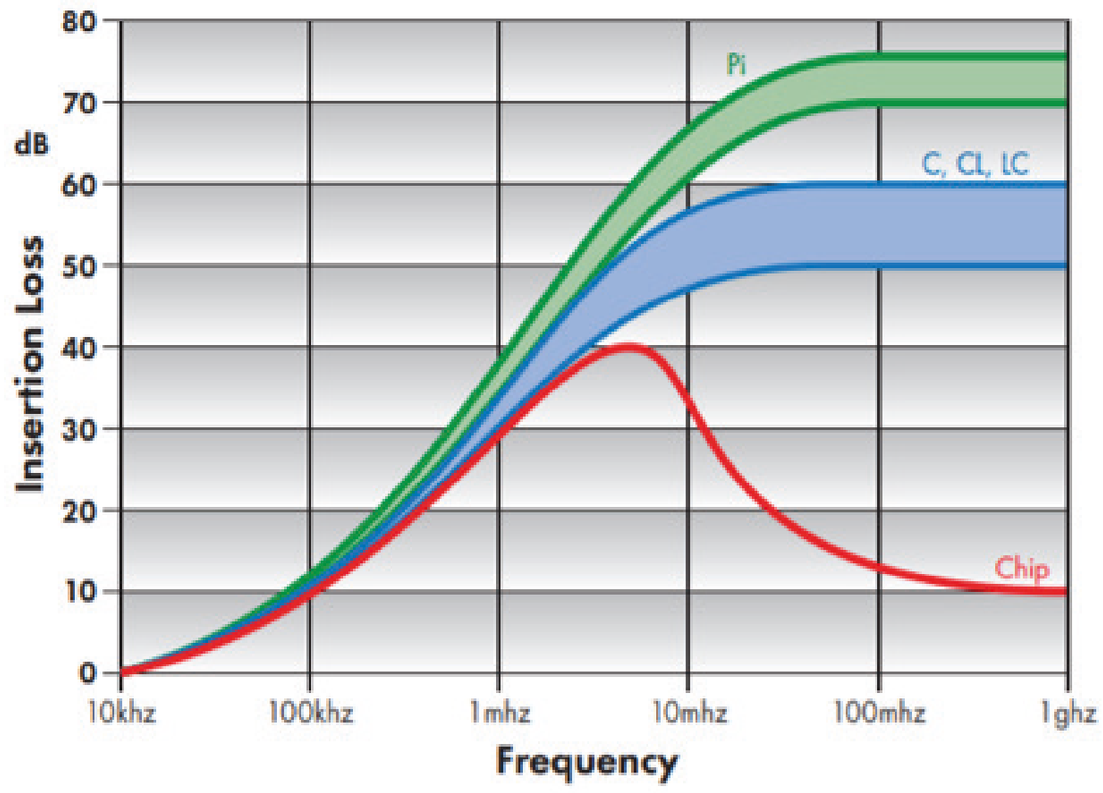
Chip Capacitor

- 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

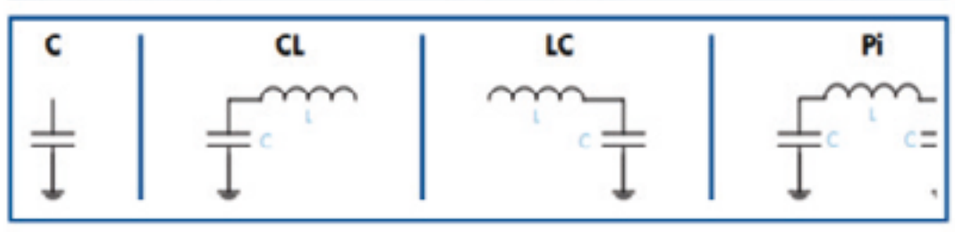
Chip Capacitor Filter Performance



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
Built with Pi Tubes, Discoidal or Planar Arrays
Provides C-L-C Component Configuration
Highest Performance: 70+ dB Insertion Loss
Very Good High Frequency Performance
C, C-L OR L-C FILTERING
Built with Chip Caps, Discoidals, Planars or C Tubes
45 - 60 dB Insertion Loss
Good Broad Spectrum Filter Performance
CHIP CAPACITOR FILTERING
40+ dB Insertion Loss
Quick Turn
Lowest Cost Option
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: -55°C - +125°C
- Hermetic Seal option
- Various sizes and threads
- High Working Voltage Rating: 50-500V typical
- Custom versions available

ADVANCED MOTION CONTROLS

AMC

www.a-m-c.com

COMPANY OVERVIEW

ADVANCED Motion Controls has earned a reputation for being the most flexible and affordable manufacturer of quality high performance and high power density servo drives. By selecting ADVANCED Motion Controls as your servo drive and controls supplier, you will be adding an integral member to your design engineering team with multi-industry expertise. 30+ years of servo drive manufacturing, with nearly 3 million servo axes built and shipped worldwide!

ANY NETWORK

CANopen EtherCAT ETHERNET POWERLINK Ethernet RS-485/232 SERIAL Modbus

We also have the ability to quickly produce custom DigiFlex® Performance™ drives utilizing many other common types of network communication.

ANY MOTOR

Three Phase (Brushless)	Single Phase
▸ Servo – BLDC, PMAC ▸ AC Induction (Closed loop vector) ▸ Closed loop stepper	▸ Brushed ▸ Voice coil ▸ Inductive load

ANY FEEDBACK

ABSOLUTE ENCODER	Tachometer
▸ EnDAT® ▸ Hiperface® ▸ BiSS®C – Mode	▸ ±10 Vdc ▸ ±60 Vdc
1 VP – P SIN/COS ENCODER	**Aux. Incremental Encoder**
INCREMENTAL ENCODER	**Resolver**
±10 Vdc position	**Hall Sensors**

ANY CONTROLLER

Digital or analog controllers	Digital or analog controllers
▸ ±10 Vdc ▸ PWM and Direction ▸ Step and Direction	▸ 0 – 5 V (Standard, Inverted or Wigwag) ▸ 0 – 5 kW (Standard, Inverted or Wigwag)

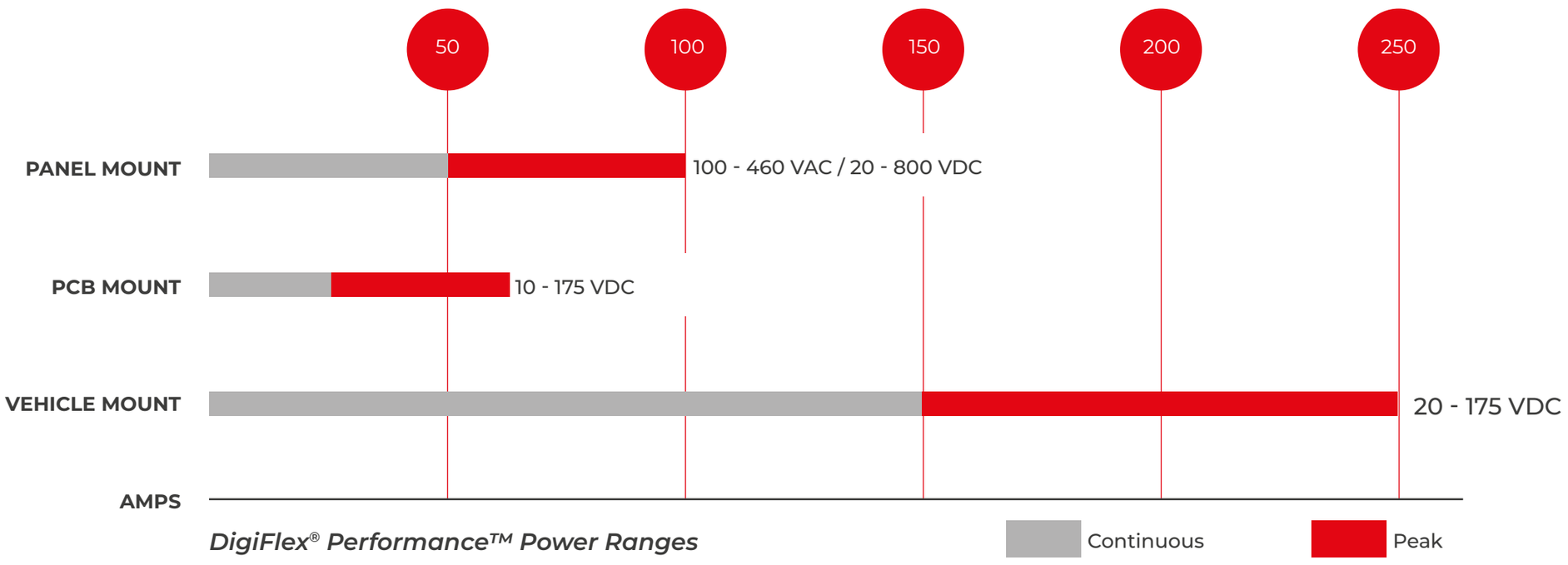
ANY ENVIRONMENT

Extreme Ambient Temperatures	Component Temperature Protection
▸ Standard products range from -40°C to +85°C ▸ Custom products operate down to -50°C and ▸ lower, and +100°C and higher!	▸ Ø PCB operating temperatures up to 105°C

ADVANCED Motion Controls Advantages:

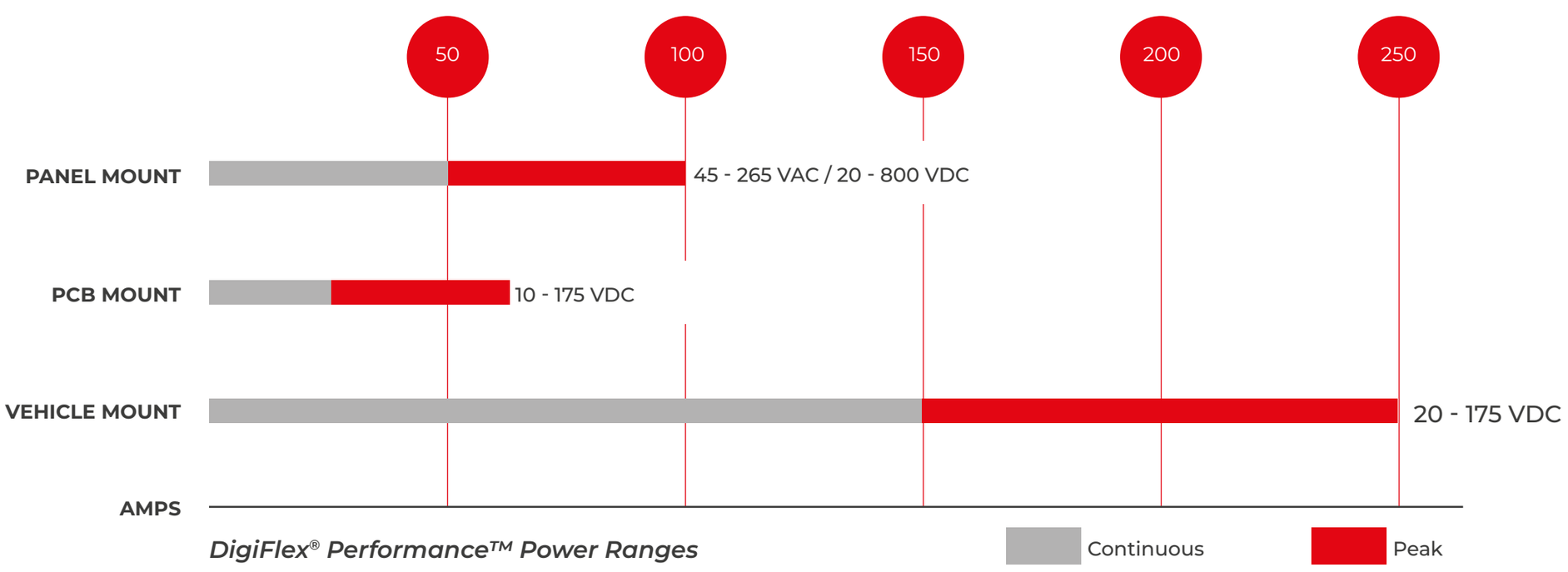
- Battery supplied, mobile operation needing 8+ hours duty / 7-day standby capability
- • ≥98% efficiency to extend overall battery life
- • Multiple power demands
- • Common control system dictated same servo drive interface but with models having different power levels
- • Minimal maintenance
- • Operation typically in remote locations
- • Long service life expected

DigiFlex® Performance™ Servo Drives



- Peak power output up to 27.4kW
- Three phase brushless (servo, closed loop vector, closed loop stepper)
- Single phase (brushed, voice coil, inductive load) motors
- Variety of feedback options - Absolute Encoder (EnDat®, Hiperface®, BiSS® C-Mode), Incremental Encoder, Hall Sensors, Resolver, 1Vp-p Sin/Cos Encoder, Tachometer
- Compatible with DriveLibrary™ - ADVANCED Motion Controls' API for C++ motion programming

AxCent™ Servo Drives



- Unparalleled benefits in both simplicity and performance,
- NOT require computer hardware or software,
- Higher bandwidth and faster response times at a lower cost,
- Including ±10V analog, PWM and Direction, and specialized electric vehicle commands,
- Optical isolation between high and low power signals standard on certain models
- Current, Velocity, and Fault Monitor analog output signals

Extended Environment products (AZX – DZX Series)

ADVANCED Motion Controls' Extended Environment products are designed to operate under harsh thermal and mechanical extremes.

- Ambient operating temperatures from -40°C to 85°C
- Over Temperature up to 105°C
- Thermal rise cycling in about 2 minutes
- Shock up to 15g's at 11ms
- Vibration up to 30grms on all 3 axes
- Designed to assist system compliance toward: MIL-STD-810F: temperature, thermal shock, humidity, altitude, shock & vibration

PERFORMANCE MOTION DEVICES
MOTION CONTROL AT ITS CORE

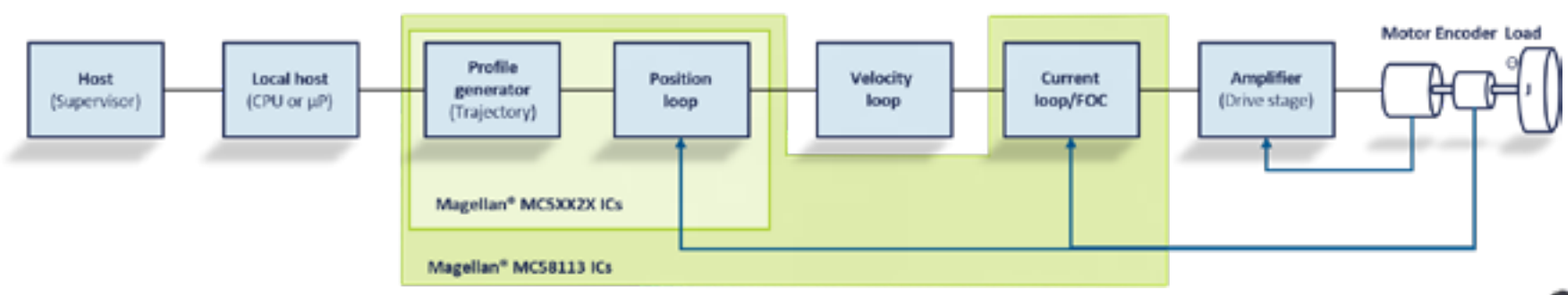
PMD

www.pmdcorp.com

COMPANY OVERVIEW

ADVANCED Motion Controls has earned a reputation for being the most flexible and affordable manufacturer of quality high performance and high power density servo drives. By selecting ADVANCED Motion Controls as your servo drive and controls supplier, you will be adding an integral member to your design engineering team with multi-industry expertise. 30+ years of servo drive manufacturing, with nearly 3 million servo axes built and shipped worldwide!

MAGELLAN POSITIONING IC FAMILY



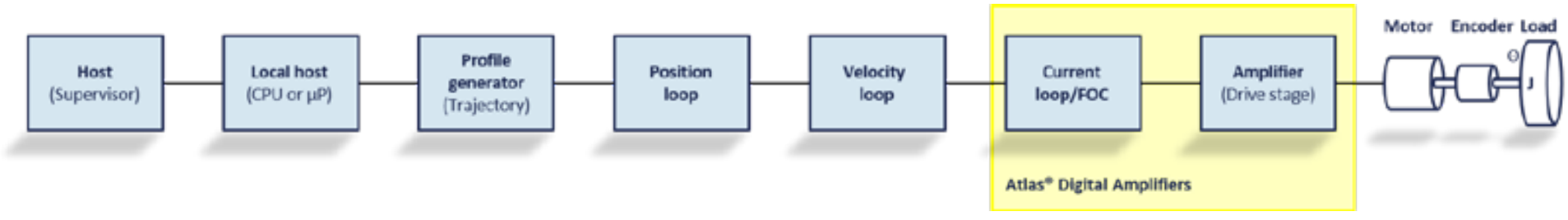
Magellan® MC58113 Ics

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

Magellan® MC5XX2X ICs

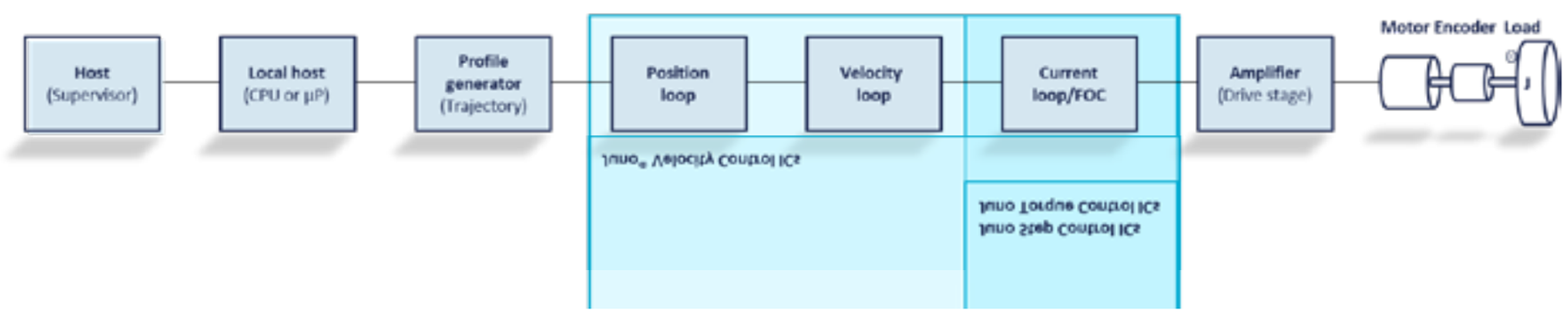
- Intelligent, multi-axis
- Multi-motor
- Easy, preconfigured motion commands
- Digital current loop
- Onboard memory

ATLAS® DIGITAL AMPLIFIERS



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

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.

ICPE

www.icpe.ro

COMPANY OVERVIEW

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.

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

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.**

REI

www.racing.com.tw

COMPANY OVERVIEW

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

NANOMOTION
A Johnson Electric Company

NANOMOTION

www.nanomotion.com

COMPANY OVERVIEW

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

PANLINK
奔 联 技 术

PANLINK

www.pan-link.cn

COMPANY OVERVIEW

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.

CUSTOMIZATION | EMI IMMUNITY | TEMP RANGE | HIGH IP | SERVO SYSTEM

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 combinedEnvironment treatments.
- 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 Protocol

CANopen, Modbus, PROFIBUS, PROFINET, DeviceNet, AS-Interface, SUPERSPEED USB, OPC UA, CC-Link V2, EtherNet/IP, CAN FD, CAN, CAMERA Link, HART COMMUNICATION PROTOCOL

Practical Applications

Multi-channel air hybrid slip ring

Multi-channel FORJ

Servo system slip ring

Non-contacting slip ring

Pancake slip ring

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 Applications

- **Aerospace 3D simulation motion turntable**

Hybrid Fiber-electrical Slip Rings

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

NVDIA Carrier Boards

Expansion Modules

Ethernet Switches

DIAMOND SYSTEMS

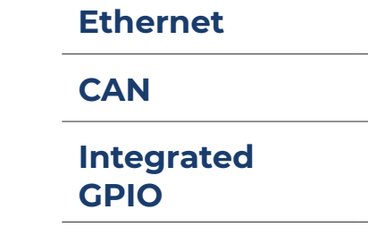
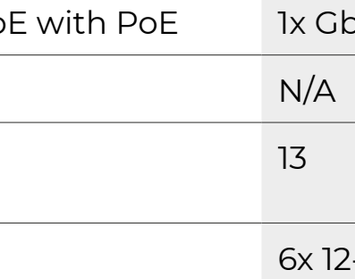
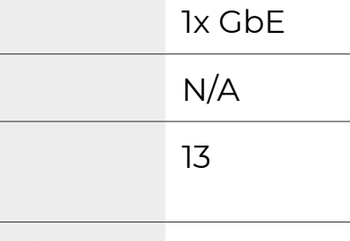
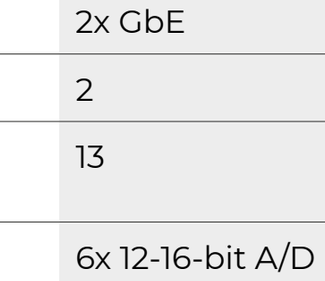
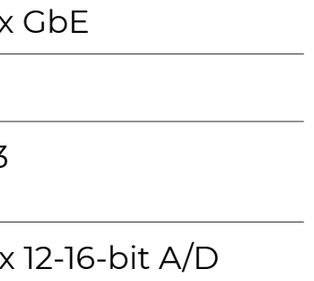
www.diamondsystems.com

COMPANY OVERVIEW

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

				
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-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.

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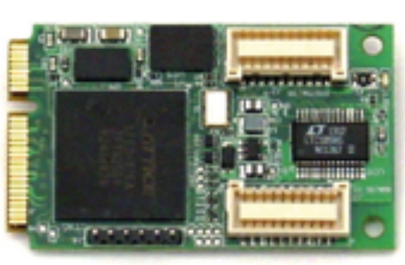
ANALOG I/O														
Product	**Form Factor**	**#A/D**	**Res**	**Max**	**Min**	**Gain**	**Max**	**Autocal**	**FIFO**	**#D/A**	**Res**	**Max**	**Min**	**GPIO**
DMM-32DX-AT	PC/104	32 SE, 16 DI	16	±10V	0-.625V	Program	250K	Auto	1024	4	16	±10V	0-5V	24 I/O
DMM-32X-AT	PC/104	32 SE, 16 DI	16	±10V	0-.625V	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

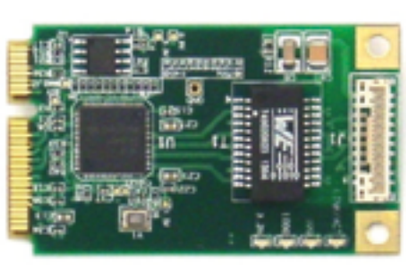
DMM-16RP-AT

RMM-1616AP-XT

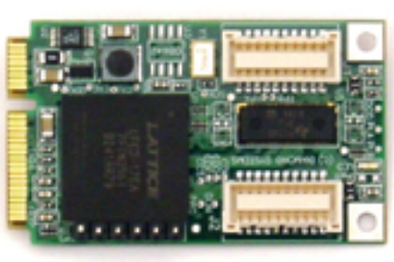
GPIO-MM-XT



DS-MPE-DAQ0804



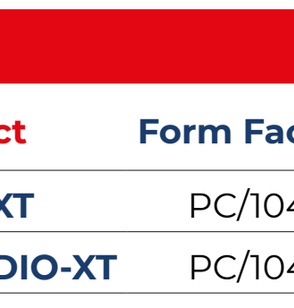
DS-MPE-GE210 Ethernet Minicard



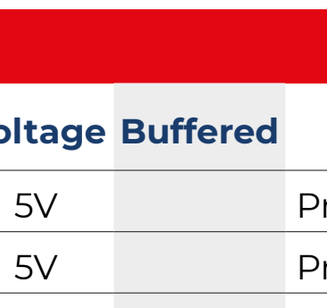
DS-MPE-GPIO

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			

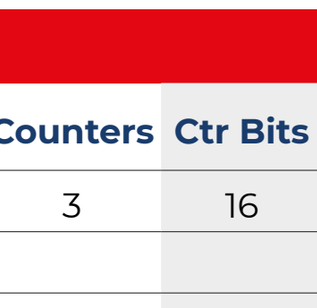


EMM-8EL-XT

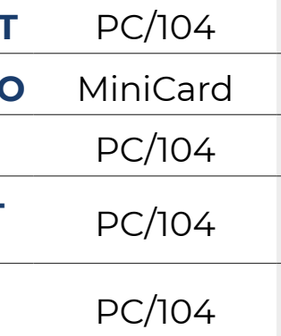


EMM-8P-XT

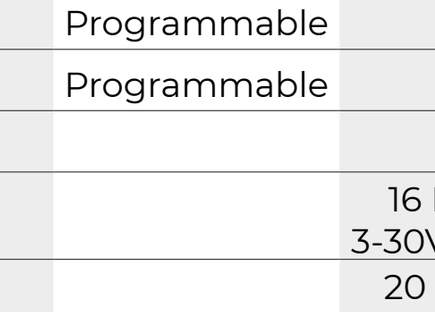
EMM-8PLUS-XT



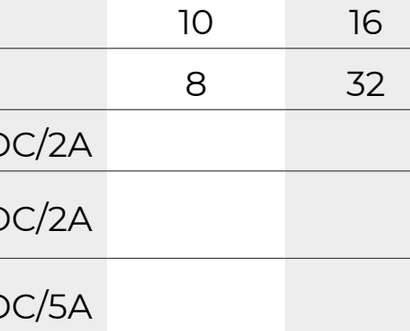
EMM-4M-XT



EMM-OPT4-XT



DS-MPE-SER4M



DS-MPE-OPT4232

Flash Memory Solutions

DRAMs

SILICON POWER

www.silicon-power.com

COMPANY OVERVIEW

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

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

swissbit

SWISSBIT

www.swisbit.com

COMPANY OVERVIEW

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.

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

	Interface	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
2.5" SSD							
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
mSATA SSD							
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
M.2 PCIe SSD							
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
Slim SATA SSD							
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
M.2 SATA SSD							
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

	Compliance	Flash Type	Density Range	Sequential Read (MB/s)	Sequential Write (MB/s)	Random 4KB Read (IOPS)	Random 4KB Write (IOPS)
eMMC BGA Package							
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
M.2 PCIe BGA Package							
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
CFexpress Cards							
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
SD Memory Cards							
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

NETZER

www.netzerprecision.com

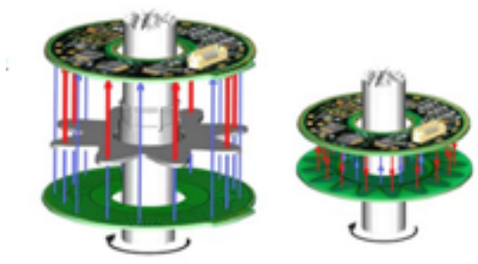
COMPANY OVERVIEW

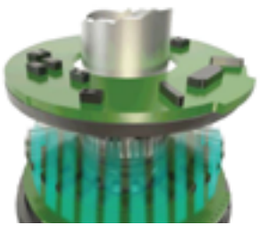
Electric Encoder™ Netzer's world-wide patented, rugged high performance Electric Encoder™ technology, suits a wide variety of applications ranging from space and avionics, through military and defense, to instrumentation and automotive. The product portfolio includes Rotary & Linear absolute or incremental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

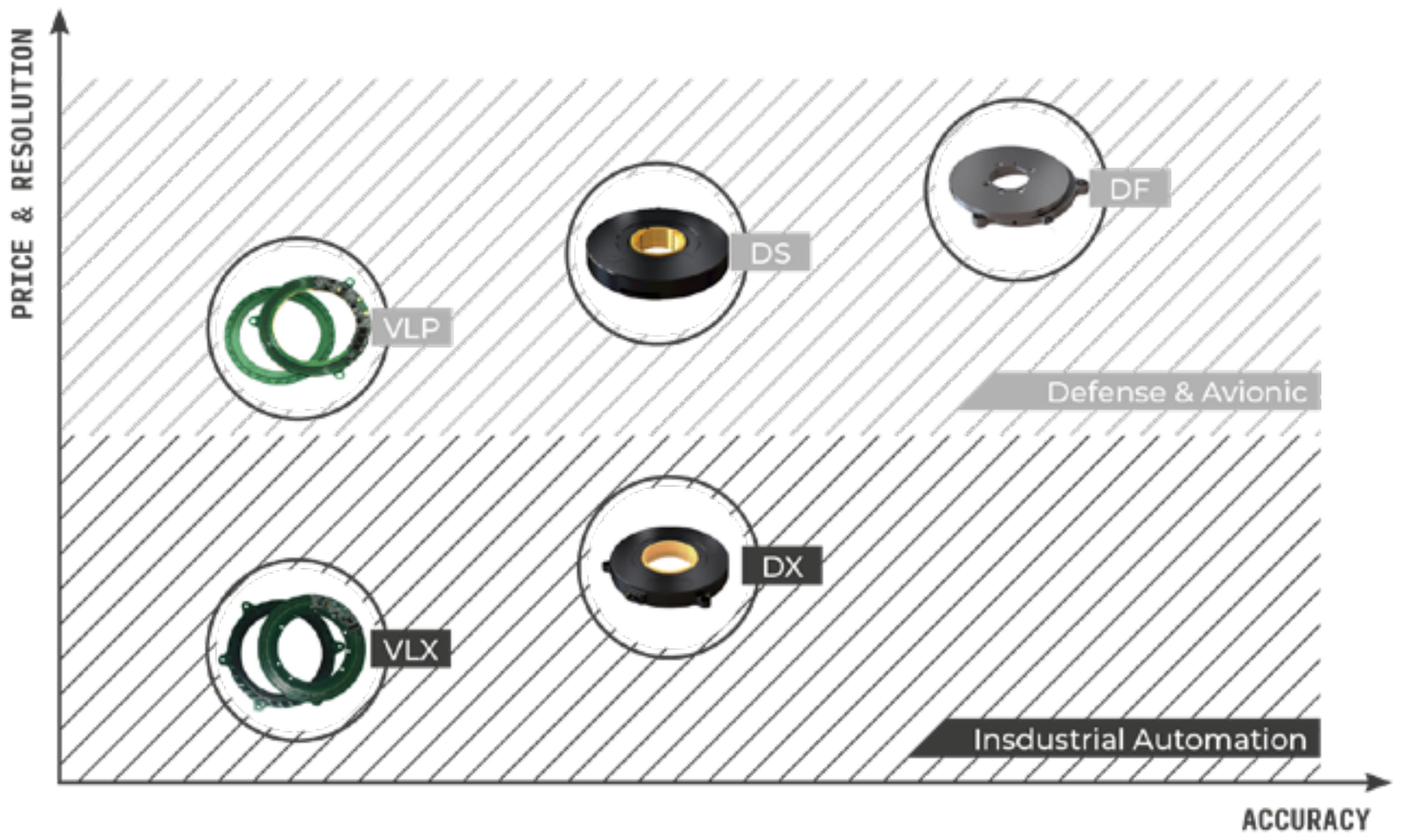
The Non-contact, absolute-position relies on interaction between the measured displacement and an internally shielded, space/time modulated, electric field and offers features unsurpassed by traditional optical and magnetic encoders.

Advantages of Electrical Encoders

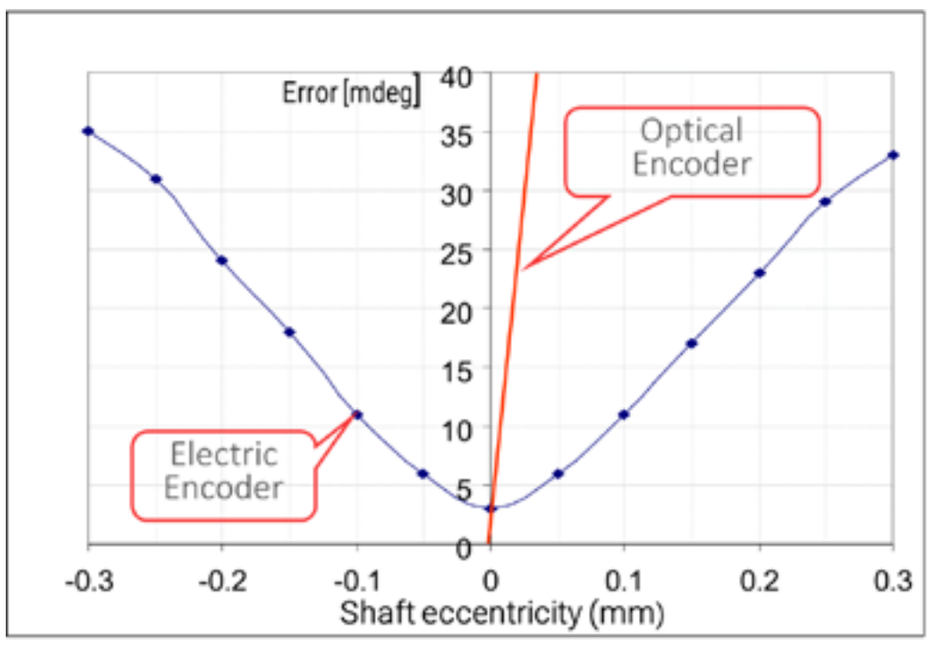
- **Simple, robust structure with a virtually no-failure-mechanism,**
- **Very low weight, inertia, and profile (=<10mm),**
- **Ring shaped, hollow shaft with a wide range of diameters,**
- **Precision to 0.001° in selected models,**
- **Default operation range from -55°C to +125°C,**
- **Insensitivity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





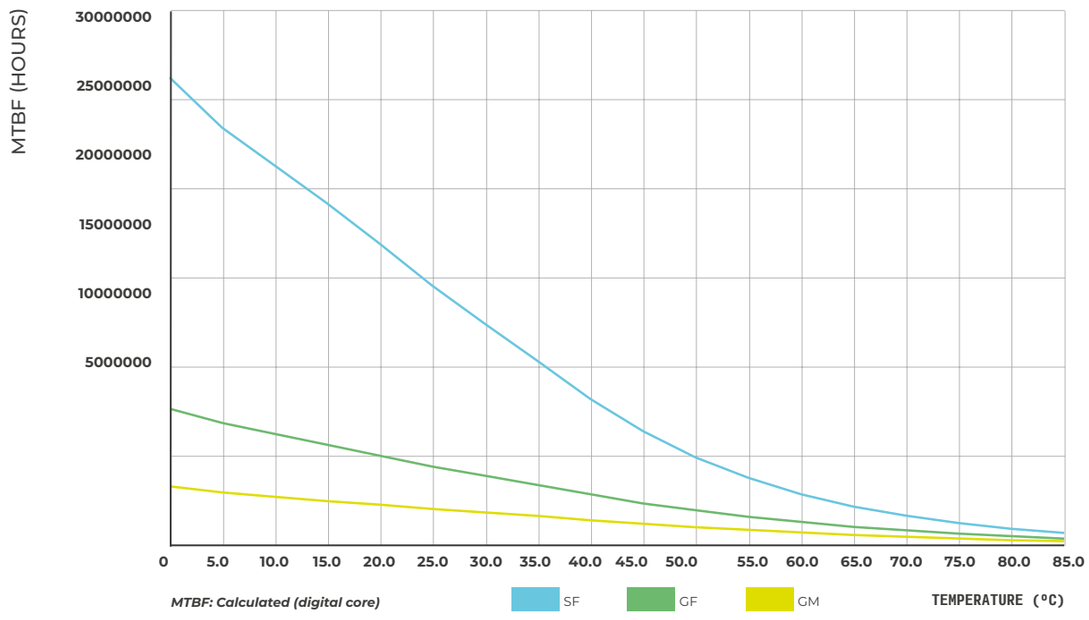


The company has structured its product range based on price performance criteria for different types of applications. For industrial applications DX and VLX products; for defense and avionic applications VLP, DS and DF products are available.



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

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



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