

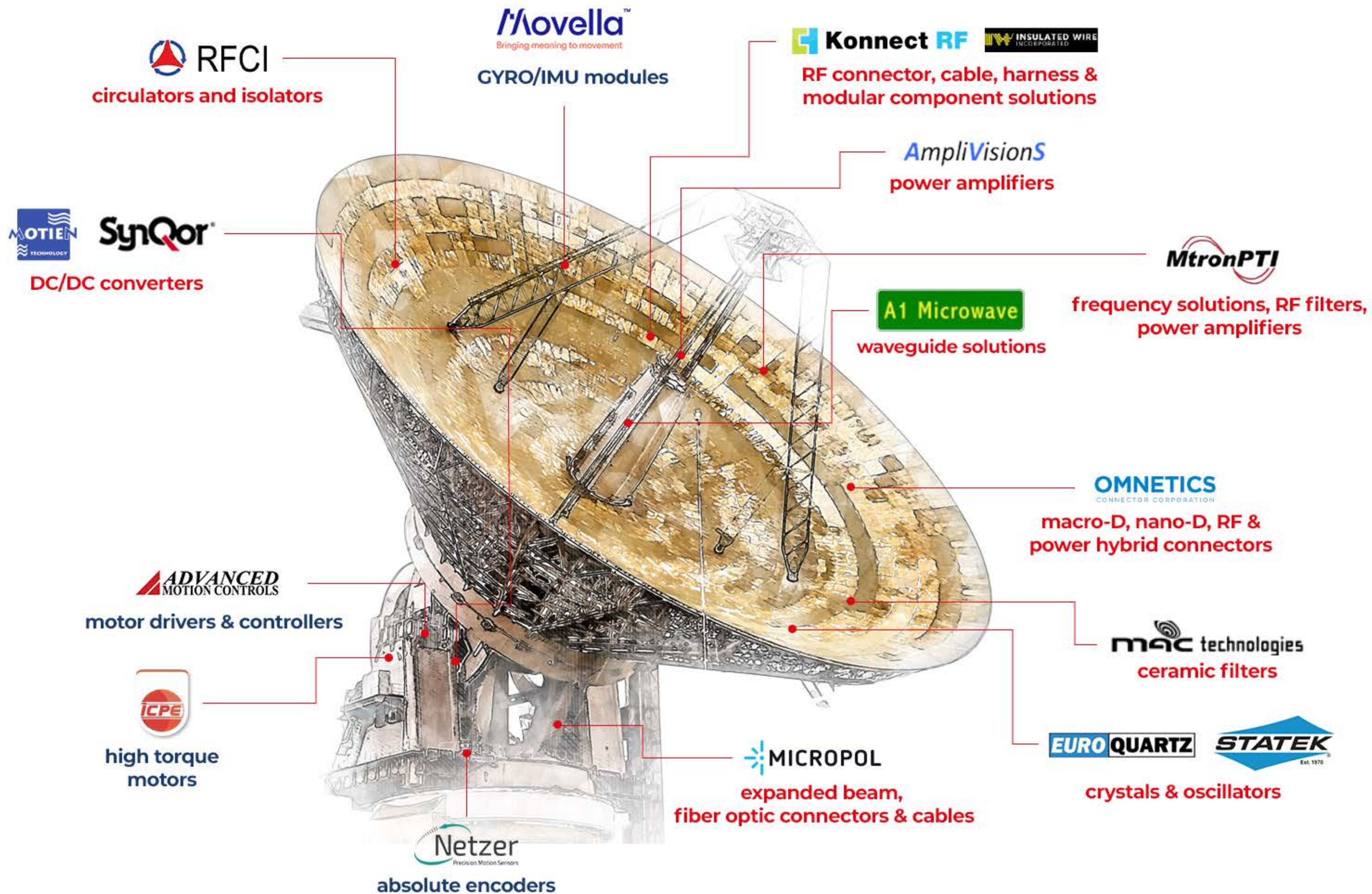


SACA
— europe —

radar

Radar, an acronym for “Radio Detection and Ranging,” is a technology that has revolutionized our ability to detect, track, and analyze objects in various applications. By emitting radio waves and measuring their reflections, radar systems provide valuable information about the range, speed, direction, and shape of objects in their vicinity. Originally developed for military purposes, radar has found extensive use in civilian domains such as weather forecasting, air traffic control, maritime navigation, and automotive safety. Its ability to operate day or night, in any weather conditions, makes radar an essential tool for surveillance, communication, and situational awareness, greatly enhancing our ability to understand and interact with the world around us.

manufacturers



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.

MCOTS 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

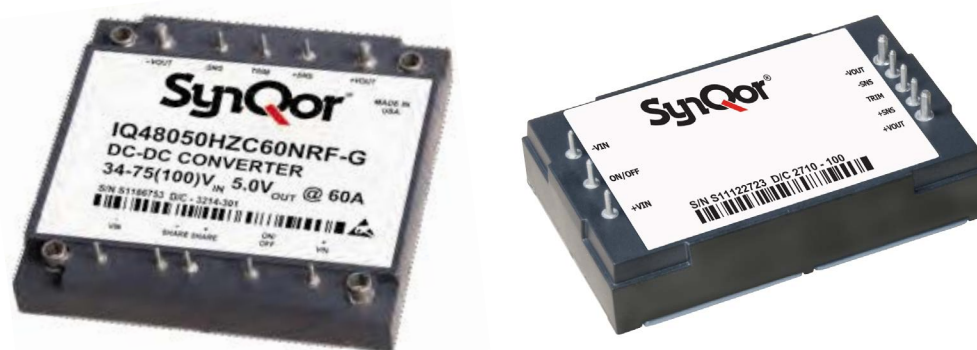
MilCOTS converters with MilCOTS filters are designed to meet:

- ▶ 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 isolated in Full Bricks)
- ▶ Remote sense for the output voltage
- ▶ Digital Output Current Sharing (HZ & HY only)
- ▶ Output voltage trim range of:
 - (Half-Brick Zeta/Yota) **+10% to -50%**
 - (Quarter-Brick Exa) **+10% to -50%**
 - (Sixteenth Brick) **+10% to -10%**

INQOR DC-DC CONVERTER



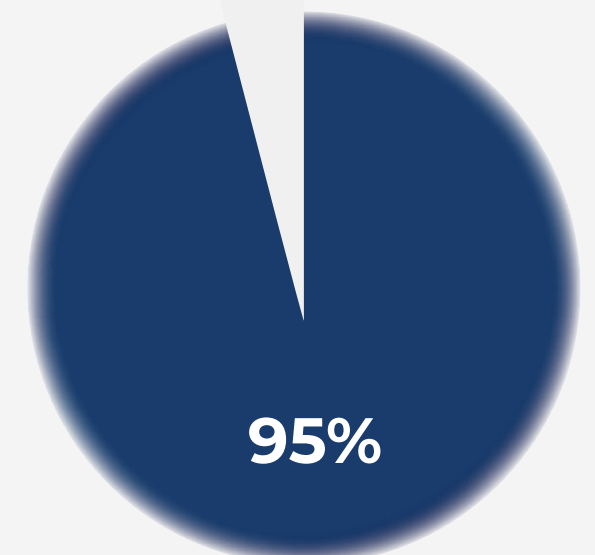
OPERATIONAL FEATURES

- ▶ 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	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				

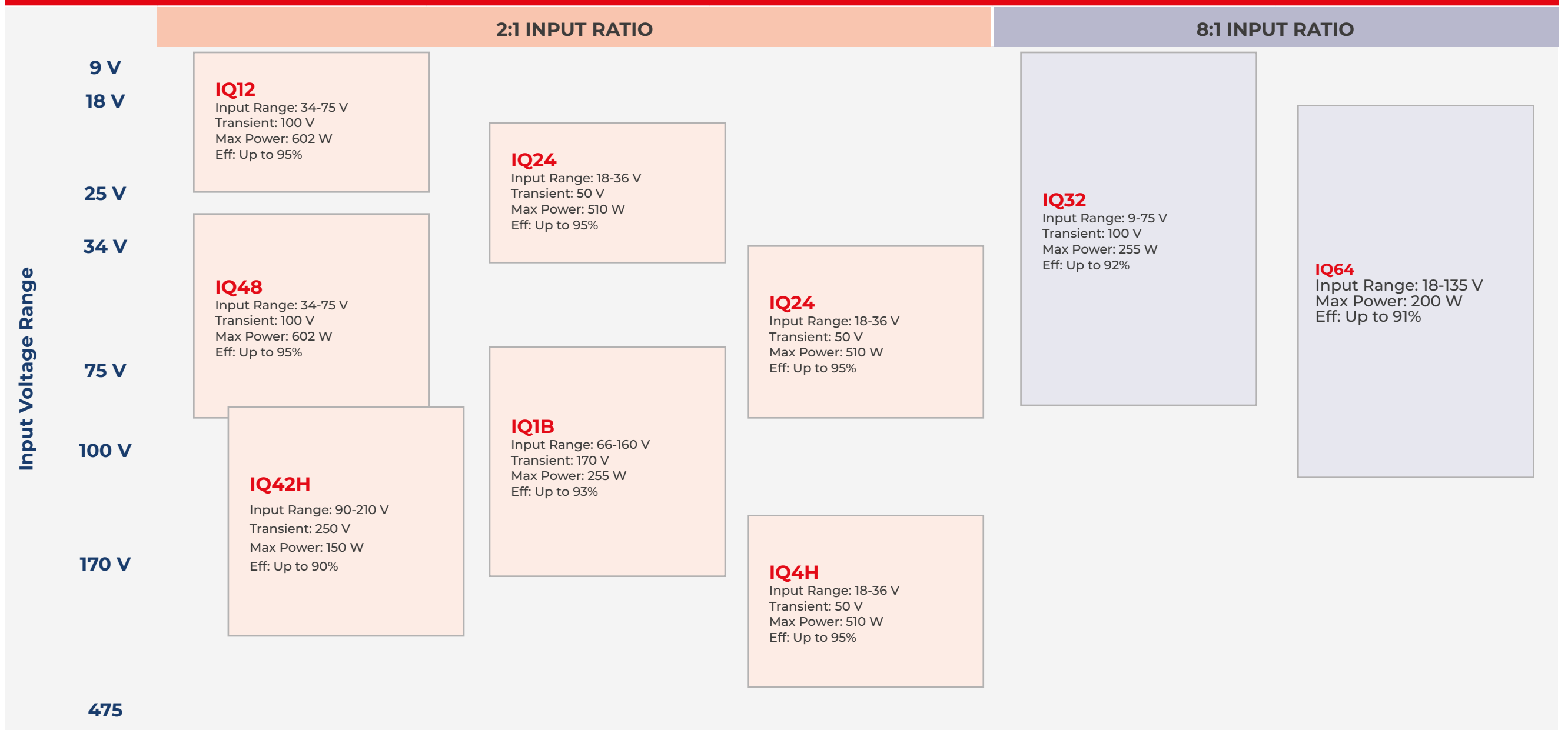
72 VDC INPUT (42-110 VDC INPUT RANGE)

	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

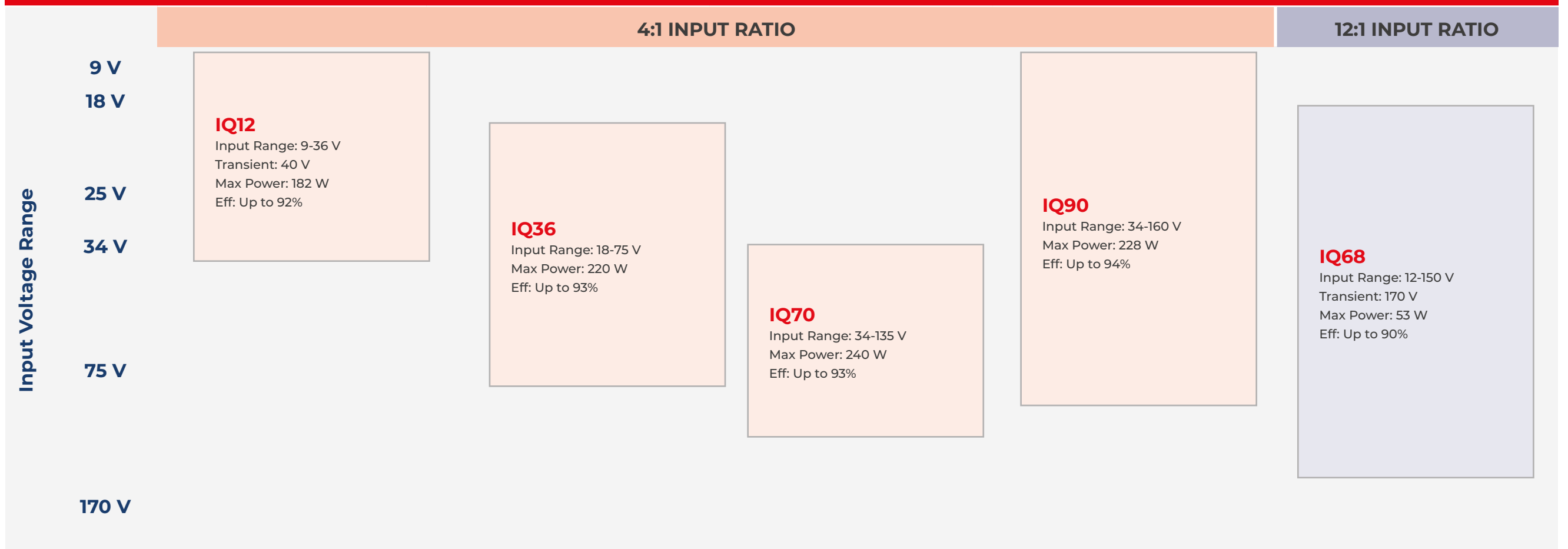
110 VDC INPUT (66-160 VDC INPUT RANGE, TRANSIENT 170 V)

	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	012: 1.2 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 & 3/4 only) C: Current monitor output/trimmable current limit (1/8 & 3/4 only) F: Current share/trimmable current limit (half brick only)
	18: 9-36 V	015: 1.5 V							
	24: 18-36 V	018: 1.8 V							
	32: 9-75 V	025: 2.5 V							
	36: 18-75 V	033: 3.3 V							
	48: 34-75 V	050: 5 V							
	64: 18-135 V	070: 7 V							
	68: 12-150 V	120: 12 V							
	70: 34-135 V	150: 15 V							
	72: 42-110 V	240: 24 V							
	90: 34-160 V	280: 28 V							
	1B: 66-160 V	300: 30 V							
	2H: 90-210 V	400: 40 V							
	4H: 180-425 V	480: 48 V							
		500: 50 V							

MOTIEN TECHNOLOGY

www.motien.com.tw

COMPANY OVERVIEW

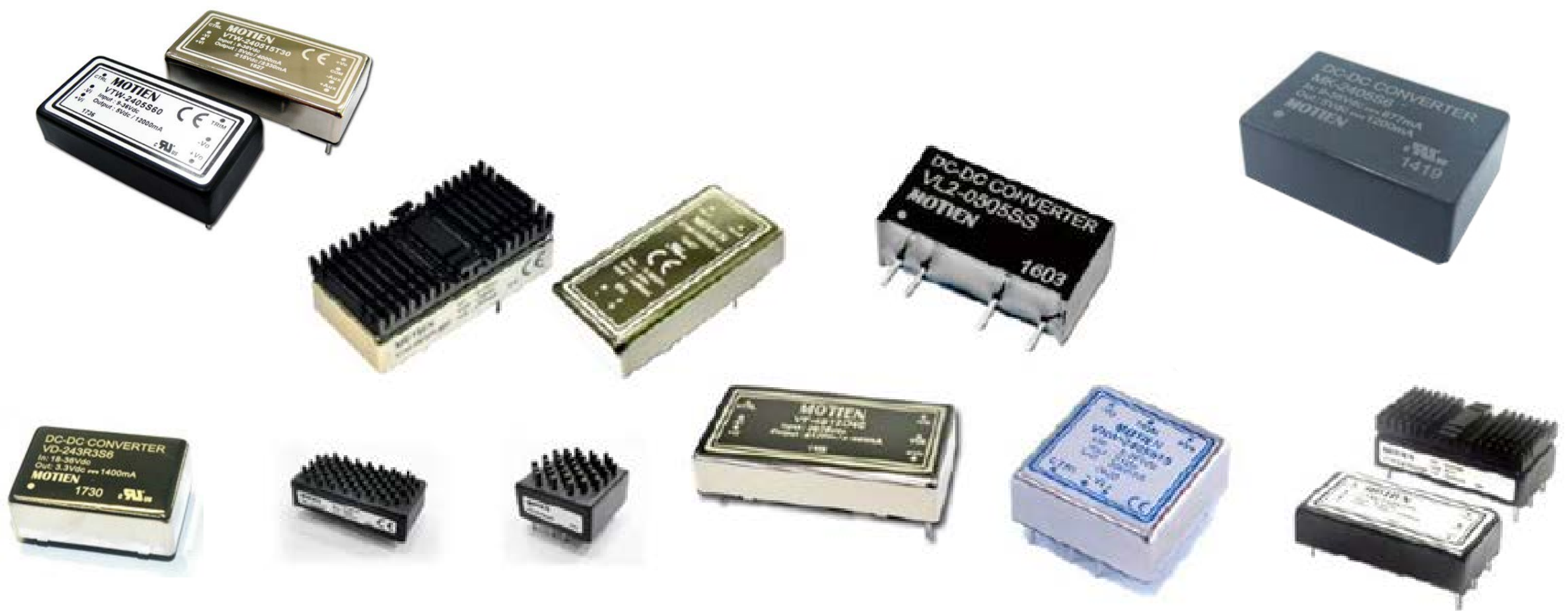
MOTIEN Technology is the professional and leading manufacturer of power solution since the establishment on 1998, with the great efforts and continually improvement for decades on power supplies, the brand MOTIEN has become well known and a symbol of quality and preferred & trusted DC power source.

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

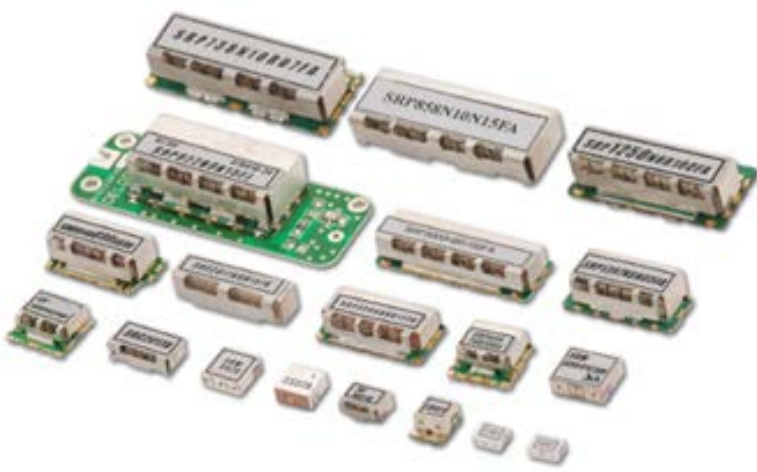
- ▶ SIP-Packages
- ▶ SMD-Packages

MAC TECHNOLOGIES

www.mactech.co.kr

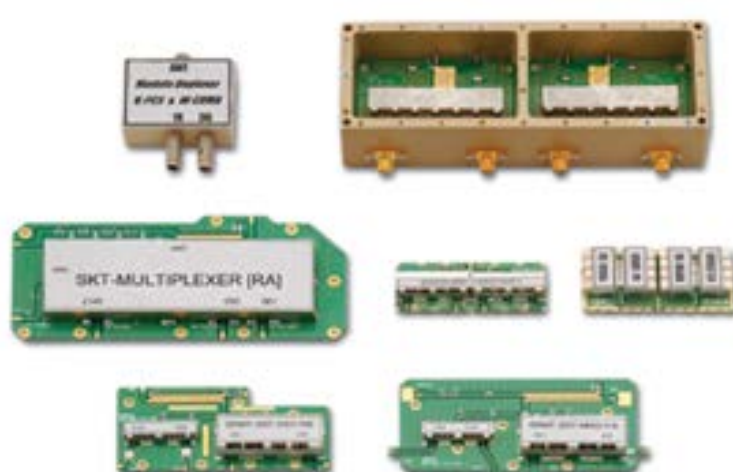
COMPANY OVERVIEW

MAC technologies is a company that develops and produces varied selections of wireless communication components essential in this ever changing high tech era, based on its source technology.



CERAMIC FILTERS

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



MULTIPLEXER

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

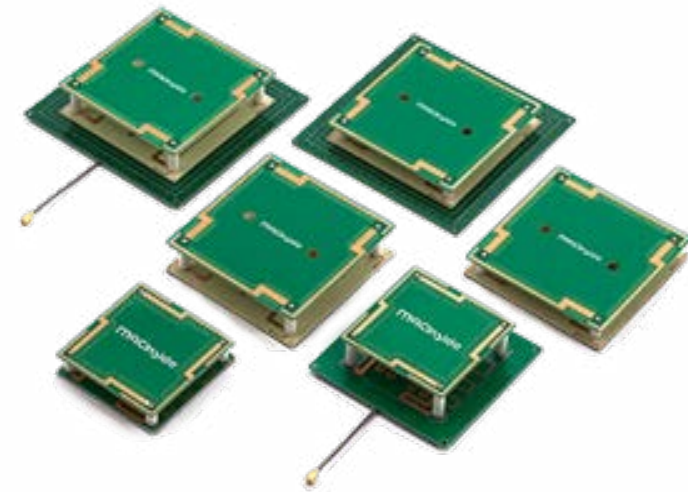


DIELECTRIC DUPLEXER

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

● QUADRIFILAR WIDE-BAND ANTENNA

- Wide-band responsibility
- Lighter than Ceramic Antennas
- Circular Polarization Antenna
- Provide highly stabilized performance
- Better multi recognition performance
- 900 MHz ISM Band (FCC, ETSI, KCC, CCC & etc.)



QUADRIFILAR WIDE-BAND ANTENNA GAIN TABLE

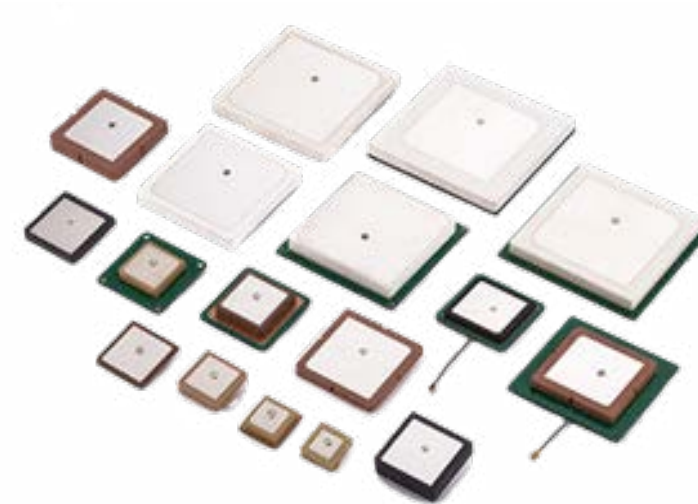
No.	Part No.	Antenna Weight (g)	Dimension (mm ²)	Frequency range(MHz)	Measurement Data (MAC technologies Chamber)					
					BandW (-10dB)(MHz)	BeamW (-3dB)(Deg)	Hor(dBiL)	Ver(dBiL)	RHCP(dBiC) AR(dB)	AR(dB)
1	MQWA45SH915-A	8	45x45x10	FCC ETSI KCC CCC & etc.	200 Typ.	110	-1.63	-0.66	27760	3.0 min
2	MQWA45SM915-A	9	45x45x15		200 Typ.	110	-0.51	0.65	34366	3.0 min
3	MQWA45SP915-A	19	45x45x18		200 Typ.	110	-0.40	0.75	45080	3.0 min
4	MQWA60F45SH915-A	11	60×60×10(F45×45)		200 Typ.	110	-1.25	-1.06	29221	3.0 min
5	MQWA60F45SM915-A	12	60×60×15(F45×45)		200 Typ.	110	-0.08	0.21	3.00	3.0 min
6	MQWA60F45SP915-A	12	60×60×18(F45×45)		200 Typ.	110	-0.16	0.95	11383	3.0 min
7	MQWA60SH915-A	13	60×60×10		200 Typ.	100	0.33	0.10	45202	3.0 min
8	MQWA60SM915-A	14	60x60x15		200 Typ.	100	0.71	0.56	18323	3.0 min
9	MQWA79SH915-A	18	79×79×10(F60×60)		200 Typ.	100	0.32	0.06	43891	3.0 min
10	MQWA79SM915-A	19	79×79×15(F60×60)		200 Typ.	100	1.Eki	0.86	34029	3.0 min

QUADRIFILAR WIDE-BAND RECOGNITION DISTANCE

No.	Part No.	Dimension (mm ²)	Card Tag (m)				Alien Tag (m)			
			Tag(H)	Tag(V)	Best(H)	Best(V)	Tag(H)	Tag(V)	Best(H)	Best(V)
1	MQWA45SH915-A	45x45x10	2.1	3.1	2.8	4.0	2.0	3.6	2.7	4.5
2	MQWA45SM915-A	45x45x15	3.0	4.0	3.0	4.4	2.1	4.4	3.0	6.6
3	MQMA45SP915-A	45x45x18	3.1	4.2	4.3	4.5	3.1	4.4	4.5	6.3
4	MQWA60F45SH915-A	60x60x10(F45x45)	3.1	3.4	4.0	4.2	3.2	4.0	4.8	4.6
5	MQWA60F45SM915-A	60x60x15(F45x45)	3.2	3.6	4.8	4.3	3.3	4.3	5.3	1.7
6	MQMA60F45SP915-A	60x60x18(F45x45)	3.2	4.4	4.6	6.3	3.3	4.6	5.2	6.7
7	MQWA60SH915-A	60x60x10	3.3	4.0	4.9	5.5	3.4	4.3	5.4	6.0
8	MQWA60SM915-A	60x60x15	3.4	4.2	5.3	5.8	4.8	4.4	6.3	6.6
9	MQWA79SH915-A	79x79x10(F60x60)	3.3	3.9	4.8	5.5	3.3	4.3	5.3	6.0
10	MQWA79SM915-A	79x79x15(F60x60)	3.4	4.2	5.8	5.8	4.8	4.4	6.8	6.7

CERAMIC ANTENNA

- Circular Polarization Antenna
- 900 MHz ISM Band (FCC, ETSI, KCC, CCC & etc.)
- Antenna dimension is as small as Teflon antenna
- Using high quality factor dielectric
- Better multi recognition performance
- Provide highly stabilized performance



CERAMIC ANTENNA GAIN TABLE

No.	Part No.	Ground Plane (mm)	Antenna Weight (g)	Dimension (mm ²)	Frequency range(MHz)	Measurement Data (MAC technologies Chamber)					
						BandW	BeamW	Hor(dBiL)	Ver(dBiL)	RHCP(dBic)	AR(dB)
						10dB (MHz)	(-3dB)(Deg)			AR(dB)	
1	MPAC18SA915P-TA	50x50	3	18.3x18.3x2	FCC ETSI KCC CCC & etc.	4 Typ.	125	-12.42	-12.01	-10.50	3.0 min
2	MPAC18SC915P-TA	50x50	7	18.3x18.3x4		5 Typ.	125	-9.81	-11.50	-8.77	3.0 min
3	MPAC24SA915P-TA	50x50	6	24.4x24.4x2		4 Typ.	120	-9.54	-8.85	-6.04	3.0 min
4	MPAC24SC915P-TA	50x50	12	24.4x24.4x4		5 Typ.	120	-6.00	-5.67	-2.77	3.0 min
5	MPAC34SA915P-TA	50x50	11	34x34x2		3 Typ.	120	-5.54	-4.46	-1.98	3.0 min
6	MPAC34SC915P-TA	50x50	21	34x34x4		4 Typ.	120	-1.47	-2.16	1.Kas	3.0 min
7	MPAC34SF915P-TA	50x50	37	34x34x7		5 Typ.	120	-0.70	-1.67	Oca.80	3.0 min

CERAMIC ANTENNA RECOGNITION DISTANCE

No.	Part No.	Ground Plane (mm)	Antenna Weight (g)	Dimension (mm ²)	Card Tag (m)				Alien Tag (m)			
					Tag(H)	Tag(V)	Best(H)	Best(V)	Tag(H)	Tag(V)	Best(H)	Best(V)
1	MPAC18SA915P-TA	50x50	18.3x18.3x2	0.4	0.7	0.7	1.0	0.3	0.5	0.5	0.6	
2	MPAC18SC915P-TA	50x50	18.3x18.3x4	0.6	0.9	0.9	1.2	0.5	0.6	0.7	0.8	
3	MPAC24SA915P-TA	50x50	24.4x24.4x2	0.7	0.9	0.8	1.1	0.6	0.8	0.7	1.0	
4	MPAC24SC915P-TA	50x50	24.4x24.4x4	1.1	1.3	1.4	1.6	0.8	1.0	1.1	1.4	
5	MPAC34SA915P-TA	50x50	34x34x2	1.2	1.6	1.6	2.2	0.9	1.2	1.3	1.7	
6	MPAC34SC915P-TA	50x50	34x34x4	1.2	1.6	1.6	2.2	0.9	1.2	1.3	1.7	
7	MPAC34SF915P-TA	50x50	34x34x7	1.5	1.9	2.1	2.8	1.2	1.6	1.4	2.0	
8	MPAC45SC915P-TA	78x78	45x45x4	1.7	2.2	4.1	4.4	1.6	2.2	4.1	4.4	
9	MPAC45SF915P-TA	78x78	45x45x7	2.0	3.1	4.8	5.4	1.9	3.0	4.8	5.4	
10	MPAC62SF915P-TA	78x78	61.5x61.5x7	2.4	3.4	5.7	6.0	2.4	3.4	5.7	6.0	
11	MPAC79SE915P-TA	78x78	78.7x78.7x6.35	2.9	3.8	6.0	7.0	2.9	3.9	6.2	7.5	

MTRON

www.mtronpti.com

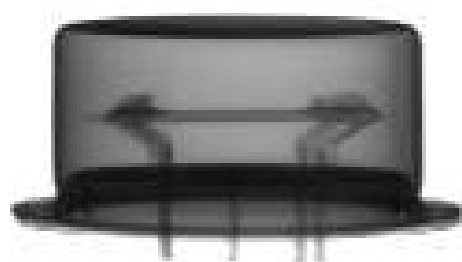
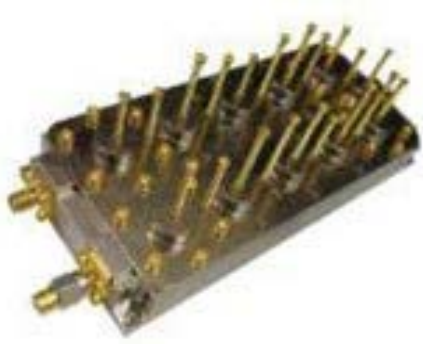
REFERENCES

Northrop Grumman Corporation
 General Dynamics Corporation
 Lockheed Martin Corporation
 L3Harris Technologies Inc.
 Collins Aerospace
 MDA Corporation
 NEC Corporation
 Boeing Co
 ISRO

COMPANY OVERVIEW

MtronPTI has over 70 design wins on satellite platforms and manned spacecraft. From Engineering Design Units to Flight hardware, MtronPTI has a proven team and track record to meet your demanding space needs.

Supporting military, commercial, and scientific space applications, MtronPTI delivers qualified solutions which fully meet the reliability and performance demands of space.



CAPABILITIES

- ▶ In House Crystal Resonator Processing
- ▶ Ultra-Lightweight and Compact Solutions
- ▶ Corona Discharge Analysis / Testing
- ▶ High Power Handling
- ▶ High Channel to Channel Isolation
- ▶ Very Low Insertion Loss

PRODUCT LINES

- ▶ Crystal Filters to 200 MHz
- ▶ LC Filters to 6 GHz
- ▶ Cavity / Waveguide Filters to 20 GHz
- ▶ N-plexers
- ▶ Precision Resonators to 200 MHz

SPACE LEVEL IN HOUSE TESTING

- ▶ Thermal Shock per MIL-STD-202, Method 107
- ▶ Terminal Strength per MIL-STD-202, Method 211
- ▶ Mechanical Shock per MIL-STD-202, Method 213
- ▶ Gross Leak Testing per MIL-STD-202, Method 112
- ▶ Random Vibration per MIL-STD-202, Method 214A
- ▶ Fine Leak Testing - Helium per MIL-STD-202, Method 112
- ▶ Sinusoidal Vibration per MIL-STD-202, Method 201 and 204
- ▶ PIND (Particle Impact Noise Detection) per MIL-STD-202, Method 217
- ▶ Other Miscellaneous Testing including: Life, Immersion, Barometric Pressure, Humidity, Solderability
- ▶ Dielectric withstanding voltage, Insulation Resistance

WORKMANSHIP STANDARTS

- ▶ In-House J-STD-001 Certified Trainer
- ▶ J-STD-001 Class 3 with Space
- ▶ Addendum

PRODUCTION CAPABILITIES

- ▶ Dedicated Clean Room
- ▶ World-class FOD Control
- ▶ In House Crystal Processing
- ▶ Internal Quartz Sweeping
- ▶ Laser Weld

FULL DC and RF TESTING

- ▶ Crystal Filters to 200 MHz
- ▶ LC Filters to 6 GHz
- ▶ Cavity / Waveguide Filters to 20 GHz
- ▶ N-plexers
- ▶ Precision Resonators to 200 MHz



STATEK

www.statek.com

COMPANY OVERVIEW
















For over 50 years, we have supported military programs with state-of-the-art crystal resonators and oscillators. We offer a complete portfolio of frequency control products manufactured and tested to military standards: oscillators to MIL-PRF-55310 Product Level B and crystals to MIL-PRF-3098. Our dedicated servicing of the demanding requirements of the military market makes us a preferred supplier to most major defense contractors.

• Military Product Features

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

• Surface Mount Quartz Crystals Key Features:

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

PRODUCT	PACKAGE(MM)	FREQUENCY RANGE	
CX20	2.5 x 1.2	16 kHz to 32.768 kHz	
CX18	1.6 x 1.0	30 MHz to 100 MHz	
CX17	4.8 x 3.0	12 MHz to 200 MHz	
CX16	2.0 x 1.2	24 MHz to 100 MHz	
		32 kHz to 180 kHz	
CX11	3.2 x 1.5	32 kHz to 240 kHz	
		16 MHz to 250 MHz	
CX11L	3.2 x 1.5	16 MHz to 250 MHz (Telemetry Crystal)	
CX11LHG High Shock	3.2 x 1.5	16 MHz to 50 MHz	
CX9HT High Temperature	4.1 x 1.5	32 kHz to 160 kHz	
		14 MHz to 250 MHz	
CX4	5.0 x 1.8	30 kHz to 250 kHz	
		600 kHz to 1.4 MHz	
		14 MHz to 250 MHz	
CX4HG High Shock	5.0 x 1.8	14 MHz to 50 MHz	
CX4HT High Temperature	5.0 x 1.8	30 kHz to 250 kHz	
		600 kHz to 2.5 MHz	
		14 MHz to 250 MHz	
CX1	8.0 x 3.6	10 kHz to 600 kHz	
		530 kHz to 2.1 MHz	
CX41HG High Shock	8.0 x 3.6	6 MHz to 250 MHz	
		6 MHz to 250 MHz	
CX1HT High Shock	8.0 x 3.6	6 MHz to 250 MHz	
SWCX1 Sweep Quartz	8.0 x 3.6	6 MHz to 250 MHz	

EUROQUARTZ

www.euroquartz.co.uk

COMPANY OVERVIEW

For over 50 years, we have supported military programs with state-of-the-art crystal resonators and oscillators. We offer a complete portfolio of frequency control products manufactured and tested to military standards: oscillators to MIL-PRF-55310 Product Level B and crystals to MIL-PRF-3098. Our dedicated servicing of the demanding requirements of the military market makes us a preferred supplier to most major defense contractors.

● Low Current Applications Standard

CLOCKS

Standard Clock Oscillator – Ultra Low Current

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

XOA Series - Real time clock and precision timing

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

XOK Series - Standard Clock Oscillator – Ultra Low Current

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

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

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

● Differential Outputs

LVPECL VCXO'S

GPQF Series - Differential LVPECL Output VCXO

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

GPQN Series - Differential LVPECL Output VCXO

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

● Low EMI Applications Standard

SPREAD SPECTRUM

HM R Group - Reduces Electromagnetic Interference

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

HM Y Group - Reduces Electromagnetic Interference

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

HM P Group - Reduces Electromagnetic Interference

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

HM B Group - Reduces Electromagnetic Interference

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

● Differential Outputs

LVDS VCXO

Differential LVDS VCXO

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

Differential LVDS VCXO

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

● Voltage Controlled

VCXO SERIES

G Series - Voltage Controlled Oscillator CMOS Output

Frequency Range	1.0 – 50.0MHz
Pulling Range	±80ppm Min
Phase Jitter	1.0pS Max
Package Sizes	7x5/ 5x3.2/3x2.2 mm

GTQF Series - Voltage Controlled Oscillator CMOS Output

Frequency Range	10 – 245.0MHz
Pulling Range	±90ppm Min
Phase Jitter	0.9pS Typical
Package Sizes	7x5and 5x3.2mm

GTQN Series - Voltage Controlled Oscillator CMOS Output

Frequency Range	10 – 245.0MHz
Pulling Range	±90ppm Min
Phase Jitter	0.6pS Typical
Package Sizes	7x5and 5x3.2mm

GPQN Series - Voltage Controlled Oscillator – PECL Output

Frequency Range	10MHz – 1450.0MHz
Pulling Range	±90 - 200ppm
Phase Jitter	0.6pS Typical
Package Sizes	7x5 and 5x3.2mm

HDQF Series - Differential LVDS Output Waveform

Frequency Range	10 – 1450MHz
Integrated Jitter	0.9pS Typical
Current consumption	16mA Typical
Package Sizes	7x5, 5x3.2

GDQF Series - Voltage Controlled Oscillator – LVDS Output

Frequency Range	10MHz – 1450.0MHz
Pulling Range	±100ppm
Phase Jitter	1.2 pS Typical
Package Sizes	7x5 and 5x3.2mm

GDQN Series - Voltage Controlled Oscillator – LVDS Output

Frequency Range	10MHz – 1450.0MHz
Pulling Range	±100ppm
Phase Jitter	0.6pS Typical
Package Sizes	7x5 and 5x3.2mm

Differential Outputs

LVDS CLOCKS

HDK Series - Differential LVDS Output Waveform

Frequency Range	10 – 220MHz
Integrated Jitter	0.2pS Typical
Current consumption	16mA Typical
Package Sizes	7x5 , 5x3.2 and 3.2x2.5

Military & Aerospace

1000BM Series - 14 pin DIL Clock CMOS

Frequency Range	10MHz – 40MHz
Input Voltage	3.3V/5V
Stability	±50ppm
Current Consumption	10 ~ 70 mA

75000 BM Series - 7x5mm smd Clock CMOS

Frequency Range	1MHz – 60MHz
Input Voltage	1.8V ~ 5V
Stability	±50 ~ ±100ppm
Current Consumption	7mA max (15pF)

STXO Series - 3.2x2.5mm High Shock smd Clock

Frequency Range	10MHz – 80MHz
Input Voltage	3.3V/5V
Current Consumption	3mA max
Phase Noise	-163 dBc/Hz

CXOLHG Series - 3.2x2.5mm High Shock smd Clock

Frequency Range	10MHz – 80MHz
Input Voltage	2.5V/3V/3.3V
Current Consumption	3mA max
Phase Noise	-163 dBc/Hz

Differential Outputs

LVDS CLOCKS

HDQN Series - Differential LVDS Output Waveform

Frequency Range	10 – 1450MHz
Integrated Jitter	0.6pS Typical
Current consumption	15mA – 31mA
Package Sizes	7x5 , 5x3.2

HCK Series - Non-PLL Differential LVDS Output Waveform

Frequency Range	13.50 – 220MHz
Integrated Jitter	0.2pS Typical
Current consumption	25mA Typical
Package Sizes	7x5, 5x3.2 and 3.2x2.5

COMPANY OVERVIEW

RF Circulator Isolator, Inc. (RFCI) was incorporated in September 2012. RFCI acquired CIPL (Circulator/Isolator Product Line) business from RFMD, when RFMD decided to exit the CI business. Management, engineering team, support group, and oversea manufacturing were transferred intact to RFCI.

Product Features

- Broad selection of frequency and Bandwidth (48MHz to 20GHz, narrow to 100% Bandwidth)
- High Reliability performance
- High Peak and CW Power Handling capability
- Wide Operation Temperature Range
- Communication Base Station Bands with excellent IMD performance
- Broadband width, Octave and Octave-plus Bandwidth
- Robust Construction
- Standards and Miniature package size
- Magnetically Shield
- RoHS Compliant
- No beryllium Oxide
- Clockwise (CW) and Counter-Clockwise rotation (CCW)
- Reflected power from 1 Watt to 200 Watts pending on Model Number (contact factory) for your particular requirement

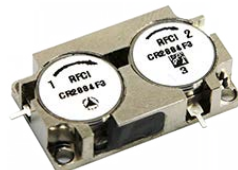
DROP-IN CIRCULATORS / ISOLATORS



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



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



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



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



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

COAXIAL CIRCULATORS / ISOLATORS



Type N Circulator from 300MHz to 10 GHz



Type N Dual Circulator from 300MHz to 10 GHz



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



SMA Circulator from 300MHz to 20 GHz



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

SMD CIRCULATORS/ ISOLATORS



SMD Circulator from 700MHz to 3800 MHz



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

SMD CIRCULATORS/ ISOLATORS



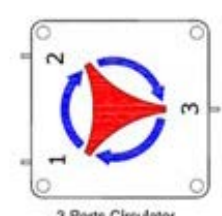
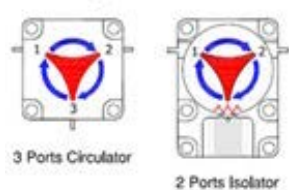
Coaxial Type N, SMA Circulator/Isolator (50W to 100W Power Handling) from 49MHz to 174 MHz



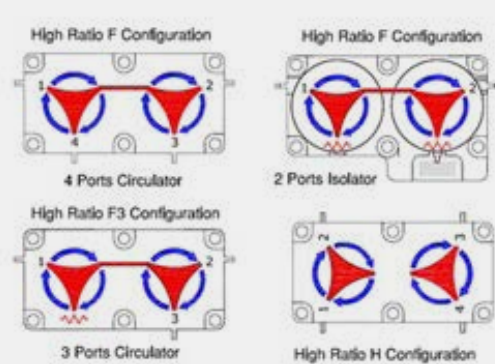
Drop-in Circulator/ Isolator (50W to 100W Power Handling) from 49MHz to 174 MHz

DROP-IN FLANGE MOUNT DEVICE

Single Junction

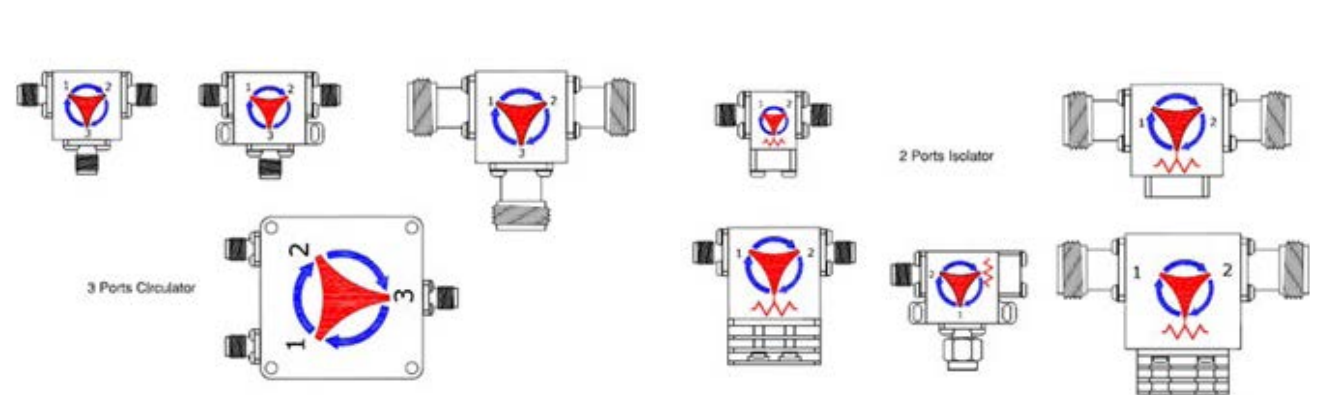


Dual Junction



COAXIAL DEVICE

Single Junction



AMPLIVISIONS

www.amplivisions.com

COMPANY OVERVIEW

AmpliVisionS is a high-new technology enterprise. AmpliVisionS design, develop and manufacture RF&Microwave products for commercial, defence and industrial systems.

The main Product line includes Broadband Power Amplifier module, Pulsed Power Amplifier module, Rack-mount Amplifier subsystem. According to requests of customer, AmpliVisionS develops wide range of RF&Microwave products from 1.5MHz to 60GHz.



AMPLIFIER MODULES UP TO 6 GHz

Model No.	Start (MHz)	Stop (MHz)	Pout (Watt)	Power Gain (dB)	Size (mm)
AVBR00205H53	20	520	200	53	180*120*25
AVBR00210H49	20	1000	80	50	150*90*25
AVBR00810H49	80	1000	80	50	150*90*25
AVBR0727H47	700	2700	50	48	162x86x25
AVBR0727H50	700	2700	100	50	180x140x25
AVBR0830H47	800	3000	50	48	162x86x25
AVBR1060H47	1000	6000	50	47	170*165*25
AVBR1060H50	1000	6000	100	50	240*240*25
AVBR2060H45	2000	6000	30	45	160*120*25
AVBR2060H47	2000	6000	50	47	170*165*25
AVBR2060H50	2000	6000	100	50	240*300*27
AVBR2560H47	2500	6000	50	48	140*120*23

AMPLIFIER MODULES & SUBSYSTEMS UP TO 18 GHz

Model No.	Start (GHz)	Stop (GHz)	Pout (Watt)	Power Gain (dB)	Size (mm)
AVBR20180H41	2	18	15	41	160*140*25
AVBR40190H40	4	19	10	40	160*140*25
AVBR60180H46	6	18	40	57	160*120*22
AVBR60180H50	6	18	100	50	340*340*40
AVBR60180U50	6	18	100	50	483 x 221 x 560 (5U)

AMPLIFIER MODULES UP TO 40 GHz

AVBR180270H37	18	26,5	5	37	160*120*27
AVBR180270H50	18	27	100	50	300x280x35
AVBR230300H35	23	30	3	35	160*120*27
AVBR260400H36	26,5	40	4	36	160*120*27
AVBR260400H37	26,5	40	5	37	160*120*27
AVBR270300H50	27	30	100	50	300x280x35

KONNECT RF

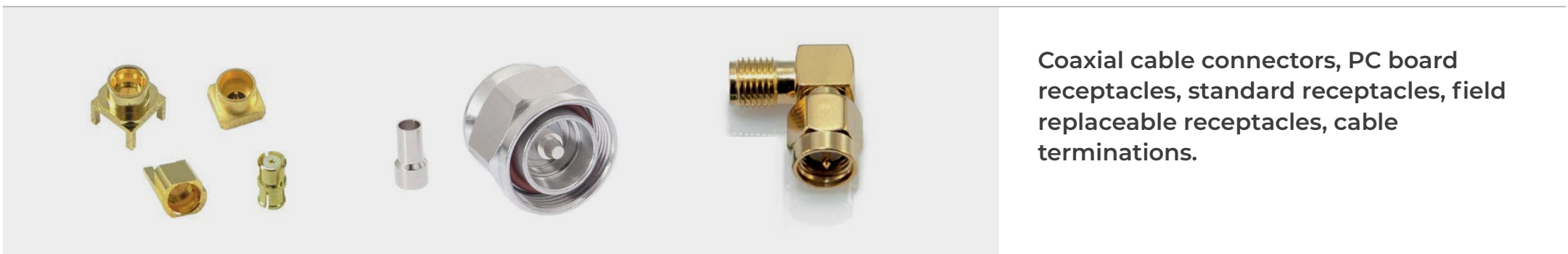
www.konnectrf.com

COMPANY OVERVIEW

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

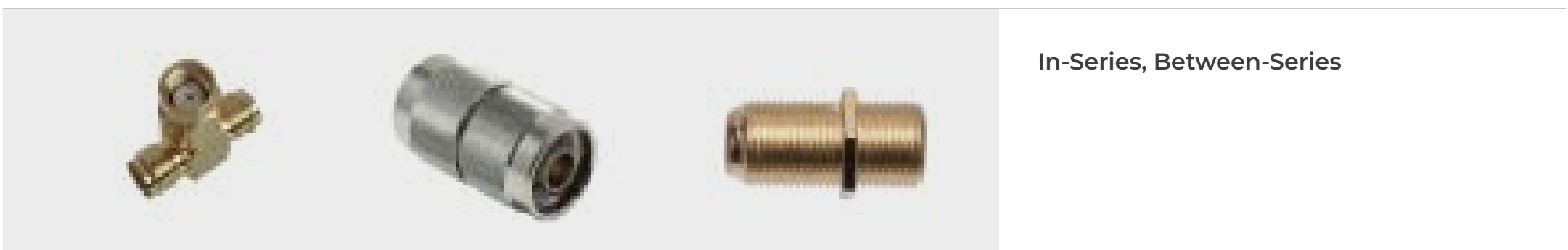
- Founded 2010
- Located in Southeast Florida
- Over 600 customers Worldwide
- Supplying Coaxial Connectors, Adapters, Cable Assemblies and Passive Components
- Global Network of Contract Manufacturers
- All products inspected, packaged, and warehoused in USA
- Rapid and Cost Effective development of
- custom products

• Connectors



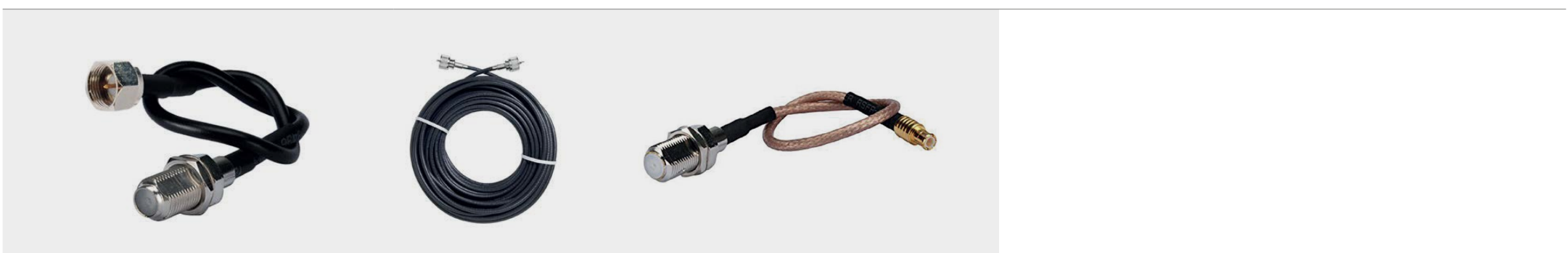
Coaxial cable connectors, PC board receptacles, standard receptacles, field replaceable receptacles, cable terminations.

• Adapters



In-Series, Between-Series

• Cable Assemblies



• RF & Microwave Components



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

INSULATED WIRE

www.iw-microwave.com

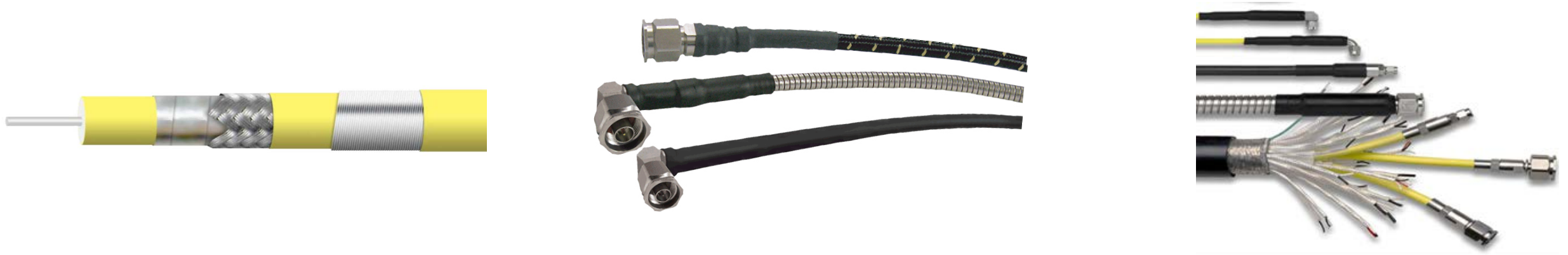
COMPANY OVERVIEW

Founded in 1970, IW developed a unique PTFE lamination process and applied it to manufacturing wire and cable. This process allowed IW to manufacture products of unprecedented reliability along with smaller diameters, from .050" to 0.500".

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

115	GPO/GPPO, 1.85mm (V™), 2.4mm, 2.92mm (K™)
125	GPO/GPPO, 1.85mm (V™)
140	2.4mm
150	SMA, TNCA, N, 3.5, 2.4, 2.92mm (K™)
160	N, SMA, TNCA, SMP, K™
170	2.92mm (K™)
180	N, SMA, TNCA, 3.5mm, 2.92mm (K™)
230	N, SMA, TNCA, SC, 3.5mm
280	N, SMA, TNCA, SC
480	N, 7/16, SC&C
RF047	SMA, 2.92mm (K™), 2.4mm, 1.85mm (V™), GPO/GPPO
RF085	Industry Standard 085 SR Connectors
RF141	Industry Standard 141 SR Connectors
RF250	SMA, TNC, N, SC

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



CABLE ASSEMBLIES

METRIC PART NUMBER

Cable Part Number **SPR** -
 Differentiator **2301A** -
 Assembly Length (in centimeters) **300M** -
 Style Code **SPS**

Connector Code (under 2301A)
Type Code (under 300M)
Style Code (under SPS)

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

● **Custom Solutions**

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

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

● **Re-Flex**

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

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

Cable part numbers are TPRFEP085, TPRFEP141 and TPRFEP250.



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

A1 MICROWAVE

www.a1microwave.com

COMPANY OVERVIEW

A1 Microwave was founded in 2001 in United Kingdom, and is a leading designer and manufacturer of passive RF and microwave components and sub-assemblies for satcoms, telecoms, defence, radar and scientific applications. Products and services are free from ITAR restrictions and many of our commercial off the shelf products (COTs) can be tailored to meet precise customer requirements.

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

TRANSMIT ARMS



PB 1369 WA



PB 1073 WA



PB 1420 WA



PB 1539 WA

RECEIVE FILTERS



PB 1500 WB



PB 1109 WN



PB 1518 WA

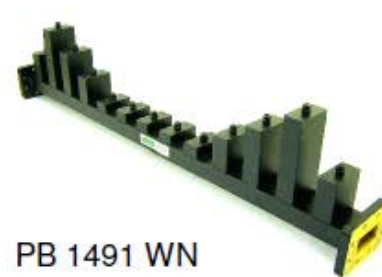


PB 1055 CB

TRANSMIT FILTERS



PB 1504 WB



PB 1491 WN



PB 1493 WA



PB 1015 CB

DIPLEXERS



PB 1308 WD



PB 1081 WA



PB 1112 WD



PB 1507 WA

ANTENNA FEEDS



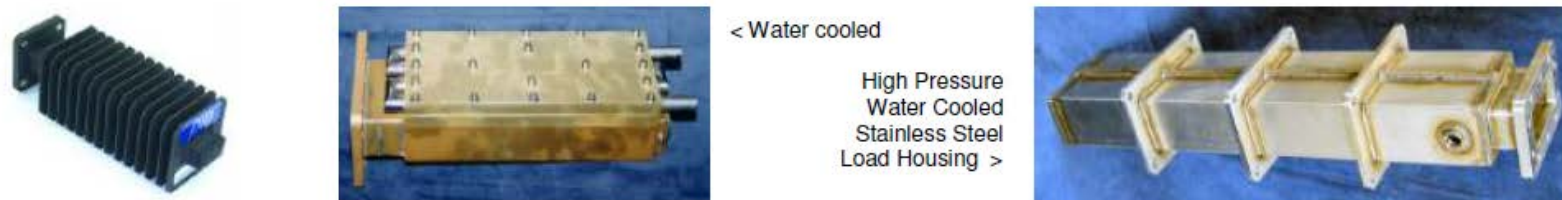
'J' Hook Feeds

Slotted Array
Waveguide
Feeds

CIRCULATOR HOUSINGS



TERMINATION HOUSINGS



BENDS AND TWISTS



MAGIC TEES AND OMT'S



COMBINERS



GENERAL COMPONENTS



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

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

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

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

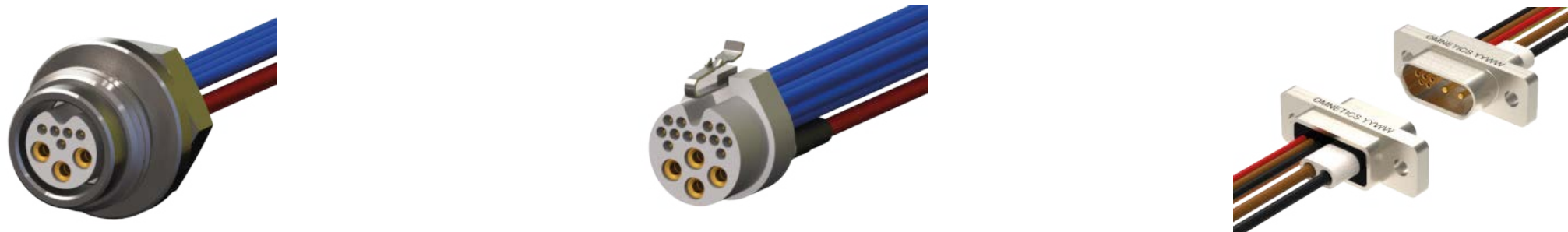
LATCHING NANO-D

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

LOW PROFILE MICRO-D

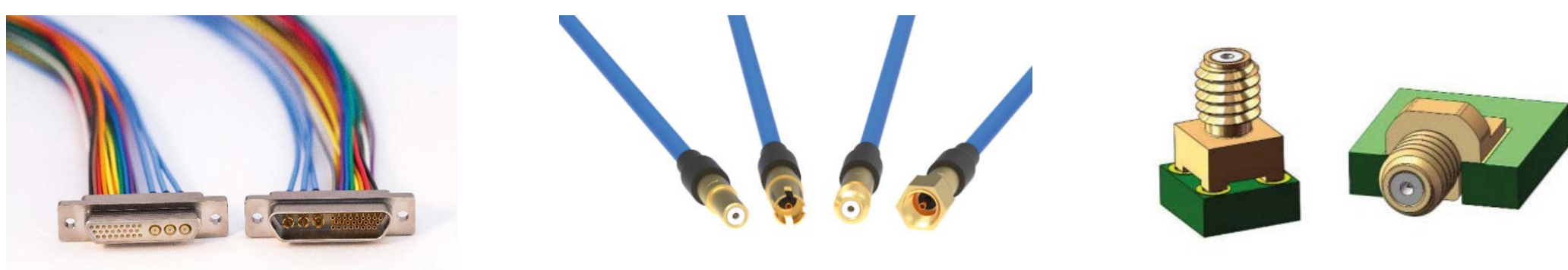
Discrete Wired (WD)	Right Angle Thru-Hole (H1)	Right Angle Thru-Hole (R2)	Solder Cup (SS)	Straight Thru-Hole (S2)

● 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 Circularity**

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**



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

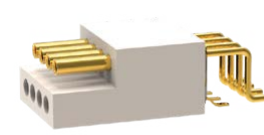
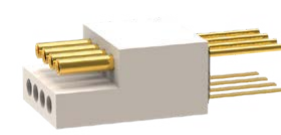
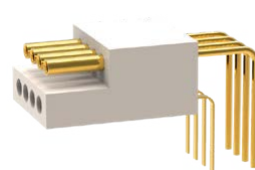
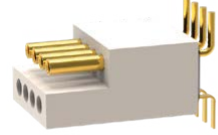
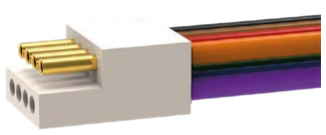
● **Nano Strip Connectors**



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

● **Polarized Nano Connector (PZN)**

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



● **Capabilities**

LATCHING NANO-D



EMI SHIELDING



CUSTOM HARNESSING



CUSTOM METAL SHELL



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 standard < 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

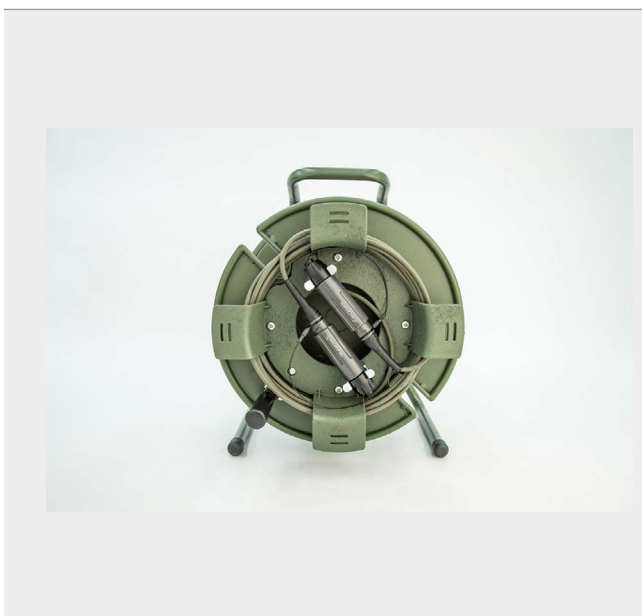
MECHANICAL

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 Length: 11ms, half sine at 35g Numbers of axis: 3 (x, y, z)

ENVIRONMENTAL

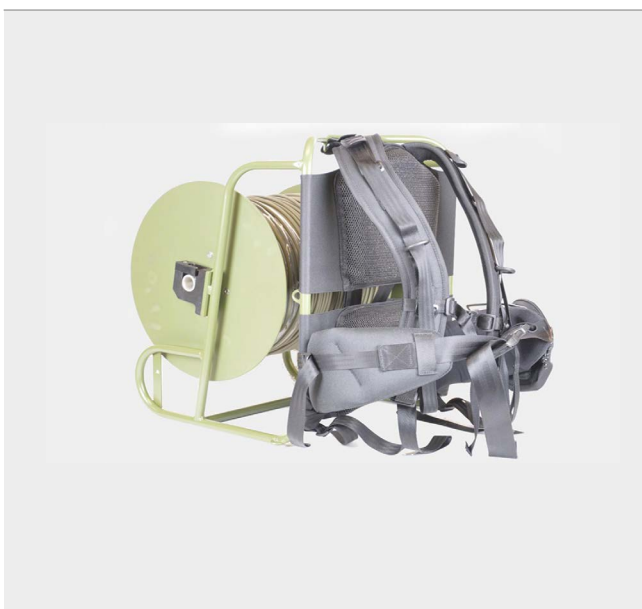
Operating Temperature: -550C to +850C, +1000C optional
Water Immersion: 10 m water depth-mated
Air Pressure : <25kPa -550C during 4h
Corrosion Resistance: 500h salt spray
Flammability: DOD-STD-1678, method 5010

• 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



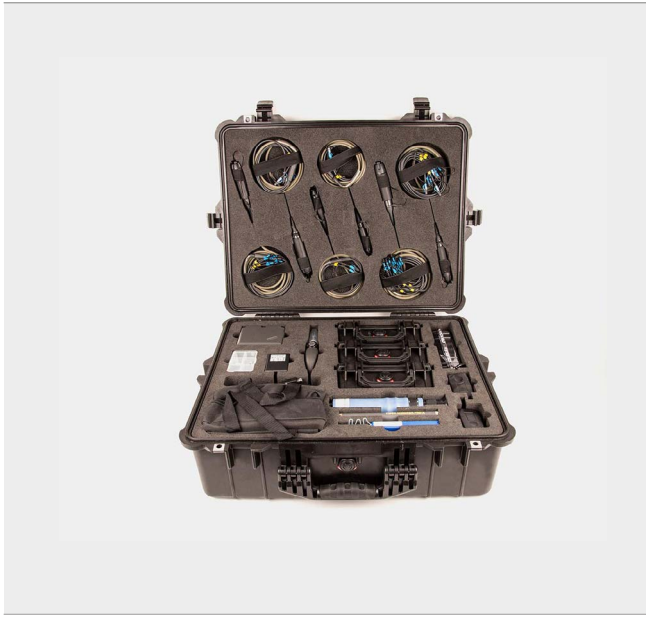
- For heavy duty use
- 1–384 fiber
- Operating temperatur -55°C to +85°C
- Vertical installation
- High flex, up to 15 million bends
- Rodent resistant

• MIL-PATCHCORD

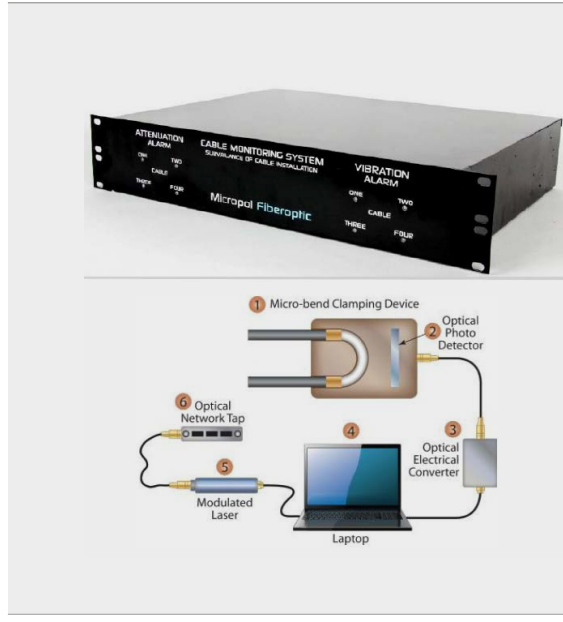


- Operating temperature -55 to +85°C
- Connectors with metal outer body
- Cut resistant
- Higher spring load
- Standard and Tailor-made

• **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**



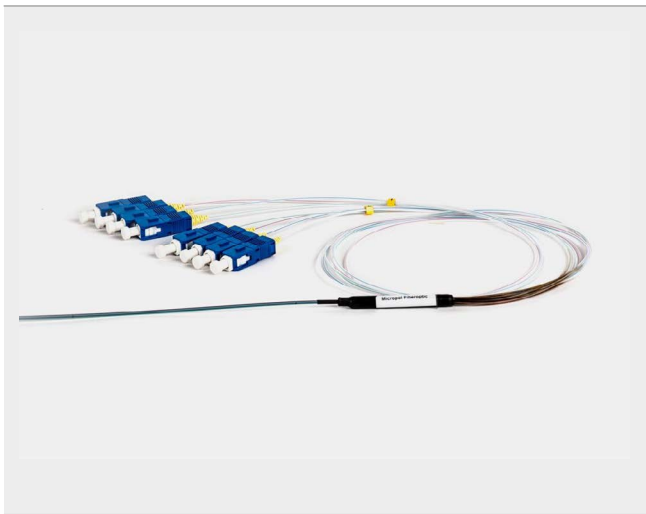
- Insertion loss < 0.2dB
- Return Loss > -55 dB
- 2-384 fiber

• **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**



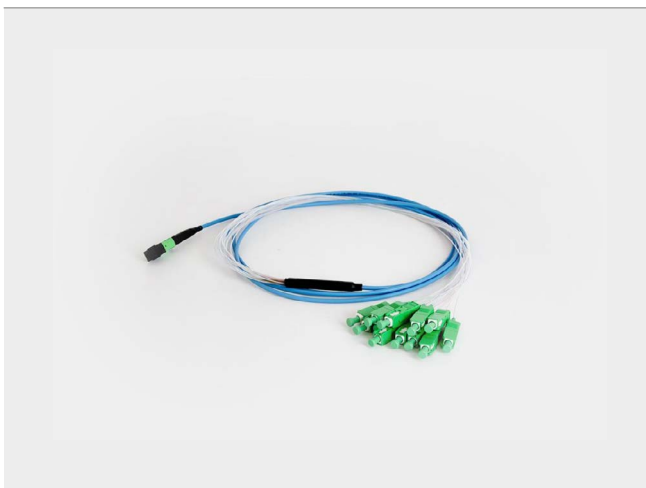
- Single mode/multi mode
- 2, 4, 8, 12, 16, 24 FIBER
- Standard lengths 1.6 or 2.4 m
- Customized lengths on request
- Rugged fanout
- Insertion loss < 0.2 dB
- Return loss > -55 dB (UPC), > -65 dB (APC)
- Available in S12 color coding

• **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**



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	1m 0.05m/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	1m 0.05m/s

REAL-TIME SENSOR FUSED DATA

		IMU (1)	VRU (2)	AHRS (3)	GNSS/INS (7)	RTK-enabled GNSS / INS (8)	RTK-enabled VINS
		Inertial Measurement Unit	Vertical Reference Unit	Attitude and Heading Reference System	GNSS / GPS enabled Inertial 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
	RTK Corrections				GNSS Time	GNSS Time	GNSS Time
	Camera (B&W) & Wheel Odometry (External Source)					Long term dead-reckoning	

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



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)

- ▶ Servo – BLDC, PMAC
- ▶ AC Induction (Closed loop vector)
- ▶ Closed loop stepper

Single Phase

- ▶ Brushed
- ▶ Voice coil
- ▶ Inductive load

ANY FEEDBACK

ABSOLUTE ENCODER

- ▶ EnDAT®
- ▶ Hiperface®
- ▶ BiSS®C – Mode

Tachometer

- ▶ ±10 Vdc
- ▶ ±60 Vdc

1 VP – P SIN/COS ENCODER

Aux. Incremental Encoder

INCREMENTAL ENCODER

±10 Vdc position

Resolver

Hall Sensors

ANY CONTROLLER

Digital or analog controllers

- ▶ ±10 Vdc
- ▶ PWM and Direction
- ▶ Step and Direction

Digital or analog controllers

- ▶ 0 – 5 V (Standard, Inverted or Wigwag)
- ▶ 0 – 5 kW (Standard, Inverted or Wigwag)

ANY ENVIRONMENT

Extreme Ambient Temperatures

- ▶ Standard products range from -40°C to +85°C
- ▶ Custom products operate down to -50°C and lower, and +100°C and higher!

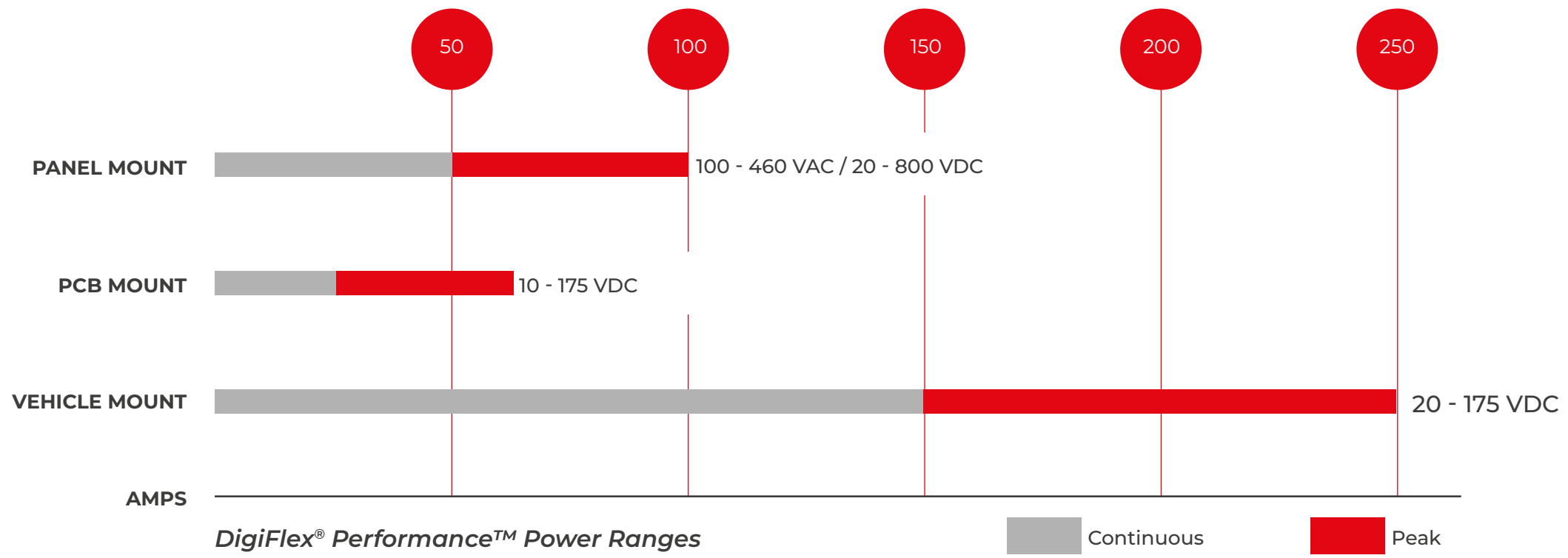
Component Temperature Protection

- ▶ Ø PCB operating temperatures up to 105°C

• **ADVANCED Motion Controls Advantages:**

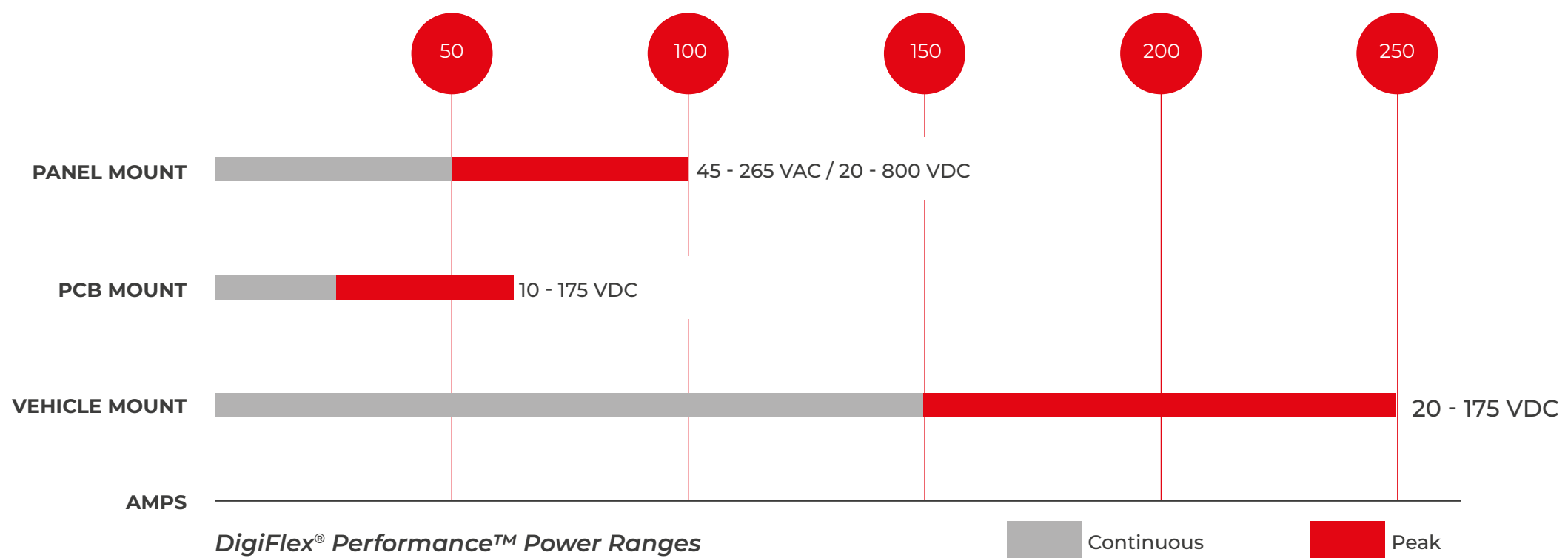
- Battery supplied, mobile operation needing 8+ hours duty / 7-day standby capability
- ≥98% efficiency to extend overall battery life
- Multiple power demands
- Common control system dictated same servo drive interface but with models having different power levels
- Minimal maintenance
- Operation typically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



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 unhused 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 unhused 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	$^{\circ}C/W$	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.



NETZER

www.netzerprecision.com

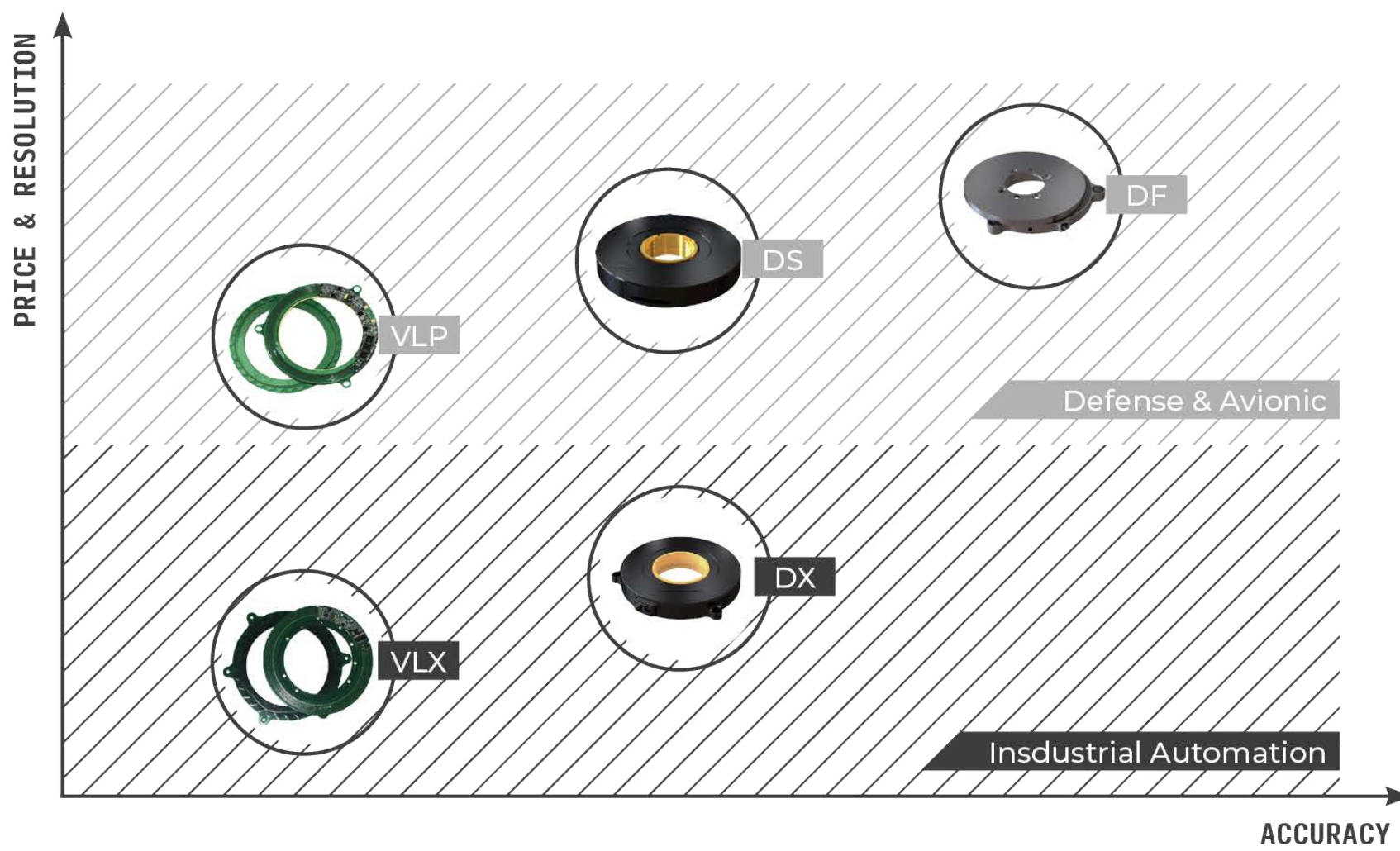
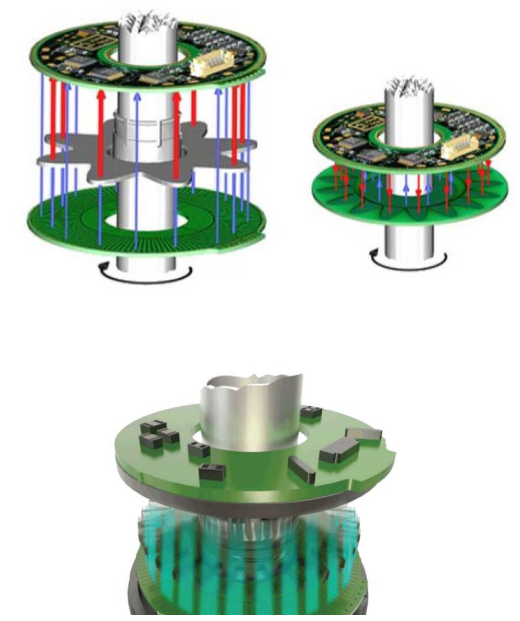
COMPANY OVERVIEW

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.

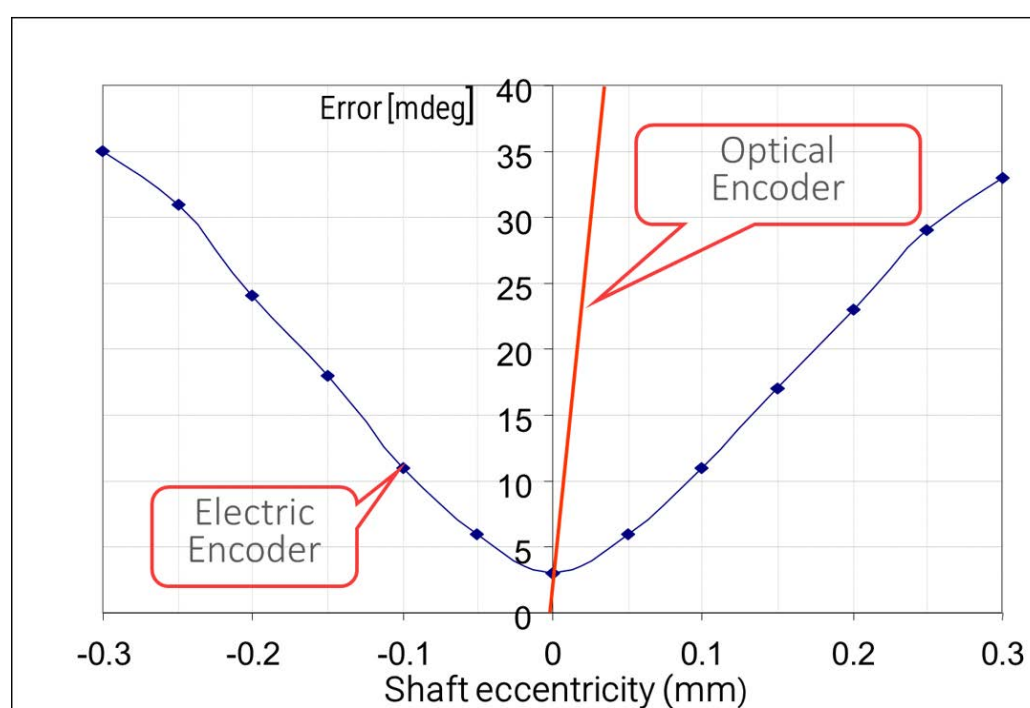
The Non-contact, absolute-position relies on interaction between the measured displacement and an internally shielded, space/time modulated, electric field and offers features unsurpassed by traditional optical and magnetic encoders.

Advantages of Electrical Encoders

- Simple, robust structure with a virtually no-failure-mechanism,
- Very low weight, inertia, and profile ($\approx <10\text{mm}$),
- Ring shaped, hollow shaft with a wide range of diameters,
- Precision to 0.001° in selected models,
- Default operation range from -55°C to $+125^\circ\text{C}$,
- 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

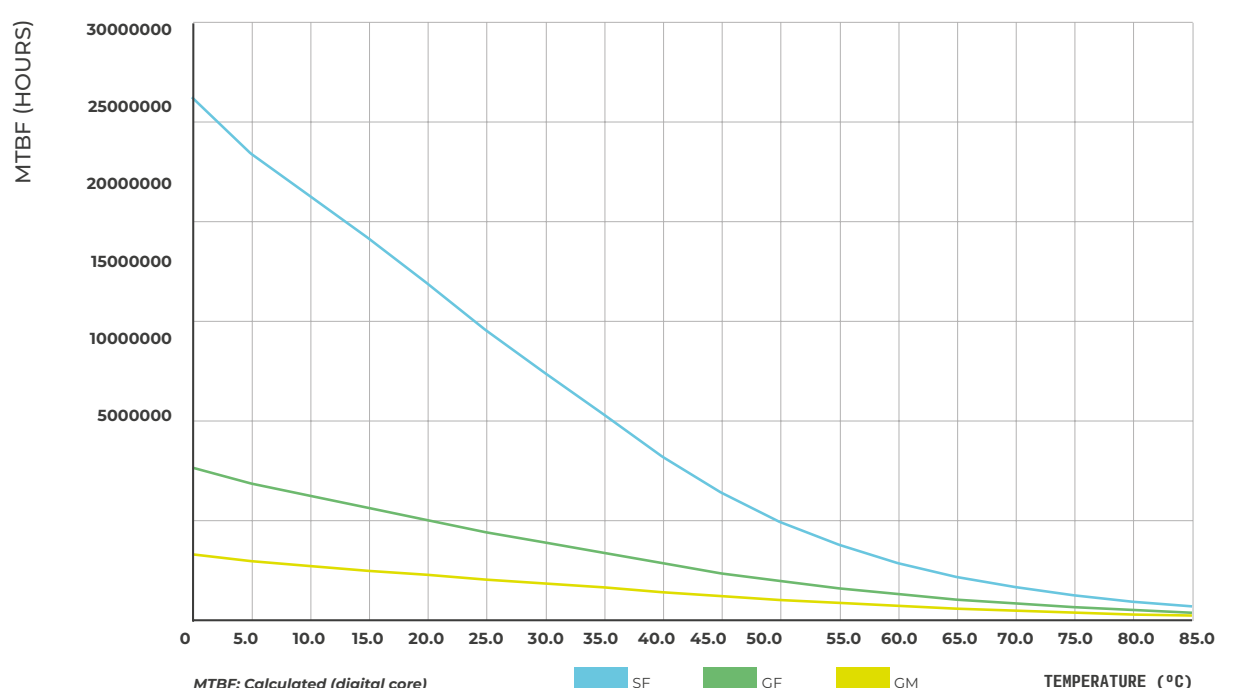


The company has structured its product range based on price performance criteria for different types of applications. For industrial applications DX and VLX products; for defense and avionic applications VLP, DS and DF products are available.



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

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





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