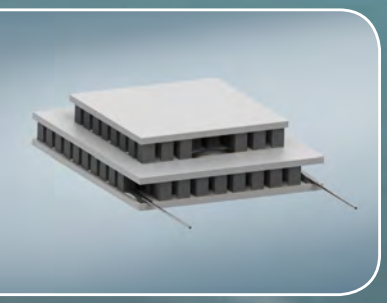
amsTECHNOLOGIES
where technologies meet solutions

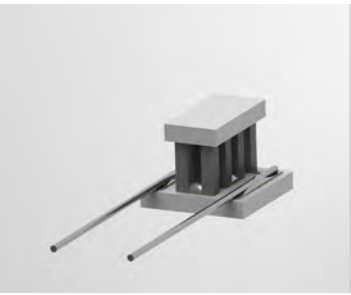
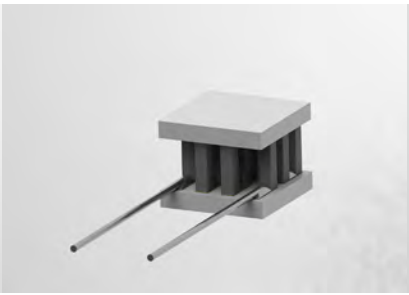
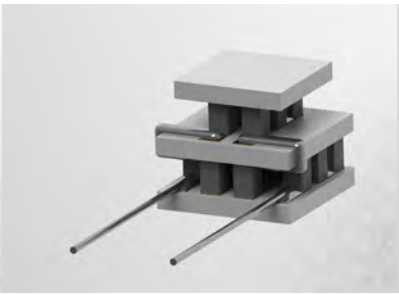
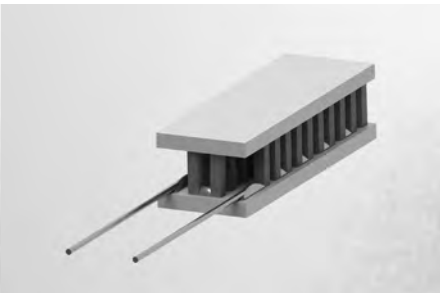
small thermoelectric coolers

high temperature differences in miniature sizes



- sizes from 1.2 × 1.8 to 21 × 21 mm
- suitable for integration in standard housings (TO cans, butterfly, etc.)
- widely used for temperature control of
  - lasers
  - LEDs
  - x-ray & IR detectors
  - CCDs
  - CPUs
  - medical equipment
  - research & scientific equipment

THERMAL MANAGEMENT

AMS Technologies – where technologies meet solutions

AMS Technologies is a leading solution provider and distributor of high-tech, leading-edge components, systems and equipment, with more than 35 years of experience to date and currently serving more than 2000 European customers.

We are the specialists in both componentry and complete solutions for Optical Technology, Thermal Management and Power Technology fields, with access to and long standing relationships with the most advanced manufacturers in each of those fields. Drawing extensively on our experience in each of these differing technologies, and coupling this with our broad system-level competence, we are able to offer seamless and comprehensive solutions incorporating complementary aspects from all three key technology fields.

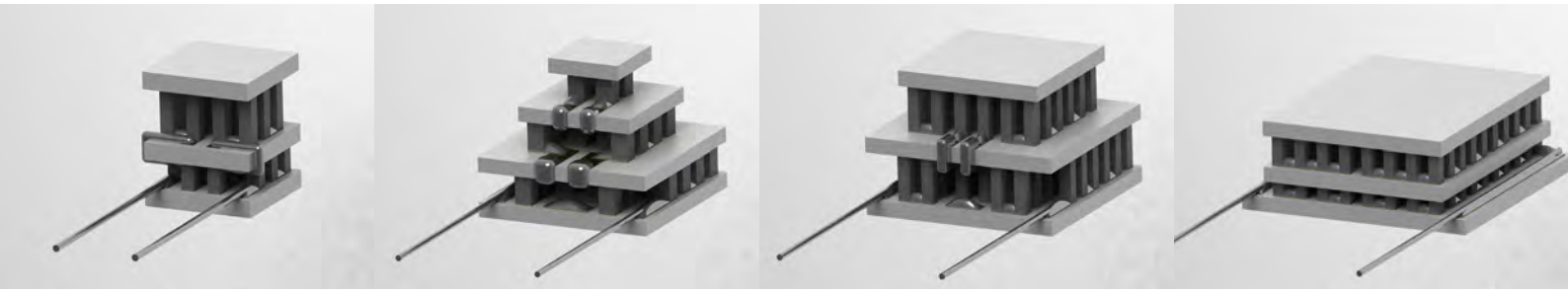
With an appropriate technical education, an element of entrepreneurial spirit and many years of design and consultancy expertise, our sales engineers can rapidly comprehend system requirements and provide you the customer with a solution that goes way beyond a simple understanding of our product datasheets. We take active involvement in the design cycle, defining and re-defining your specifications, and leading in many cases to highly specific, customized products and solutions. Helping you to effectively outsource your production line, we can even provide you with the necessary leading turnkey contract manufacturing services in our key competency fields.

AMS Technologies has been delivering solutions into a variety of high-tech markets, including renewable energies, medical, defence & aerospace, research & scientific and various other industrial segments. Our customer base consists of Europe's largest leading technology corporations, a network of universities and research institutes as well as the most promising start-ups.

We thrive by working in a 'customer first' environment. Our pan-European customers are serviced from a network of local offices in Germany, the UK, France, Italy, Spain, Poland and Sweden, with a focused operations and logistics centre located in Munich, Germany.

Our commitment: Identifying the best solution for your project enabling you to become your customers' first choice!
Your AMS Technologies team

- Optical Technologies
- Power Technologies
- Thermal Management



small thermoelectric coolers

Small thermoelectric cooling systems require careful design, proper selection of components and special skills for assembly. We partner with companies with decades of expertise – enabling the production of small TECs with high quality and reliability as well as excellent performance characteristics. AMS Technologies provides extensive development services for medical equipment, instrumentation, automotive and other applications. We also offer a complete thermoelectric solutions portfolio, including design consultancy and all components for thermoelectric modules, heat sinks, temperature controllers, assemblies air-to-air, plate-to-air, liquid–to-air and others.

single stage small thermoelectric coolers

The "S-Series" is a line of single stage small thermoelectric coolers providing maximum temperature difference up to 76 K. This series includes models ranging from standard rectangular and linear TECs to special variants with increased cooling capacity. Here you will find TECs with dimensions from really tiny 1.2 × 1.8 to somewhat larger 21 × 21 mm and heights from 1.1 to 4.1 mm. These TECs' maximum cooling capacities range from 0.12 to 62 W.

multi stage small thermoelectric coolers

With the "M-Series", AMS Technologies offers multi stage small thermoelectric coolers from two to five cascades with maximum temperature differences between its cold and hot side of up to 130 K. Here you can find cascade TECs with standard pyramidal design, TECs with enlarged surface of the top cascade (cold side) to work with relatively big cooled objects as well as linear cascade TECs, especially designed for deep cooling of long objects like CCDs or detector arrays.

customized small thermoelectric coolers/assemblies

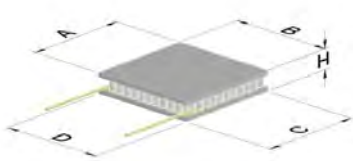
You can't find a standard TEC that meets your requirements? Parameters like thermal or electrical characteristics, geometrical design or coating of the outer TEC surfaces can be varied within wide limits – thus creating small thermoelectric coolers which will exactly satisfy your special demands.
Assembling small TECs into sockets, packages and housings is a rather complicated technological process, requiring time, specialized equipment and highly skilled staff. Our partners have years of experience in assembling small TECs into a wide range of standard sockets and housings like TO-cans (TO-8, TO-5, TO-3), Butterfly, etc., using solders or thermally conductive epoxies. Different types of thermistors can also be installed to the TEC cold/hot sides. Contact us to discuss your individual TEC or assembly requirements in more detail!

standard rectangular small single stage thermoelectric coolers (SS series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
SS-AA-008	1.55	0.41	0.49	71	1.6	1.6	3.2	3.2	3.2
SS-AB-008	1	0.28		72	1.9				
SS-AC-008	0.8	0.22		72	2.1				
SS-AD-008	0.7	0.19		72	2.3				
SS-AE-008	0.55	0.15		72	2.6				
SS-AA-014	1.55	0.72	0.85	72	1.6	3.2	3.2	3.2	3.2
SS-AB-014	1	0.48		73	1.9				
SS-AC-014	0.8	0.39		73	2.1				
SS-AD-014	0.7	0.33		73	2.3				
SS-AE-014	0.55	0.27		73	2.6				
SS-AA-016	1.55	0.83	0.96	72	1.6	3.2	3.2	4.8	3.2
SS-AB-016	1	0.55		73	1.9				
SS-AC-016	0.8	0.44		73	2.1				
SS-AD-016	0.7	0.37		73	2.3				
SS-AE-016	0.55	0.3		73	2.6				
SS-AA-022	1.55	1.15	1.3	72	1.6	3.2	4.8	3.2	4.8
SS-AB-022	1	0.75		73	1.9				
SS-AC-022	0.8	0.6		73	2.1				
SS-AD-022	0.7	0.52		73	2.3				
SS-AE-022	0.55	0.42		73	2.6				
SS-AA-024	1.55	1.24	1.4	72	1.6	3.2	4.8	4.8	4.8
SS-AB-024	1	0.82		73	1.9				
SS-AC-024	0.8	0.67		73	2.1				
SS-AD-024	0.7	0.55		73	2.3				
SS-AE-024	0.55	0.47		73	2.6				
SS-AA-034	1.55	1.73	2	72	1.6	4.8	4.8	4.8	4.8
SS-AB-034	1	1.16		73	1.9				
SS-AC-034	0.8	0.93		73	2.1				
SS-AD-034	0.7	0.8		73	2.3				
SS-AE-034	0.55	0.65		73	2.6				
SS-AA-036	1.55	1.9	2.2	72	1.6	4.8	4.8	6.4	4.8
SS-AB-036	1	1.22		73	1.9				
SS-AC-036	0.8	1		73	2.1				
SS-AD-036	0.7	0.82		73	2.3				
SS-AE-036	0.55	0.68		73	2.6				
SS-AA-046	1.55	2.35	2	72	1.6	4.8	6.4	4.8	6.4
SS-AB-046	1	1.57		73	1.9				
SS-AC-046	0.8	1.27		73	2.1				
SS-AD-046	0.7	1.08		73	2.3				
SS-AE-046	0.55	0.88		73	2.6				
SS-AA-048	1.55	2.5	2.9	72	1.6	4.8	6.4	6.4	6.4
SS-AB-048	1	1.63		73	1.9				
SS-AC-048	0.8	1.34		73	2.1				
SS-AD-048	0.7	1.1		73	2.3				
SS-AE-048	0.55	0.91		73	2.6				
SS-AA-060	1.55	3.11	3.6	72	1.6	6.4	6.4	6.4	6.4
SS-AB-060	1	2.05		73	1.9				
SS-AC-060	0.8	1.65		73	2.1				
SS-AD-060	0.7	1.41		73	2.3				
SS-AE-060	0.55	1.14		73	2.6				
SS-AA-064	1.55	3.33	3.8	72	1.6	6.4	6.4	8	6.4
SS-AB-064	1	2.12		73	1.9				
SS-AC-064	0.8	1.79		73	2.1				
SS-AD-064	0.7	1.47		73	2.3				
SS-AE-064	0.55	1.22		73	2.6				
SS-AA-096	1.55	4.95	5.8	72	1.6	8	8	8	8
SS-AB-096	1	3.28		73	1.9				
SS-AC-096	0.8	2.64		73	2.1				
SS-AD-096	0.7	2.26		73	2.3				
SS-AE-096	0.55	1.83		73	2.6				
SS-AA-116	1.55	3.33	7	72	1.6	8	9.6	8	9.6
SS-AB-116	1	2.12		73	1.9				
SS-AC-116	0.8	1.79		73	2.1				
SS-AD-116	0.7	1.47		73	2.3				
SS-AE-116	0.55	1.22		73	2.6				
SS-AA-120	1.55	6.24	7.2	72	1.6	8.6	9.6	9.6	9.6
SS-AB-120	1	4.1		73	1.9				
SS-AC-120	0.8	3.36		73	2.1				
SS-AD-120	0.7	2.76		73	2.3				
SS-AE-120	0.55	2.28		73	2.6				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)



Contact us

standard rectangular small single stage thermoelectric coolers (SS series)

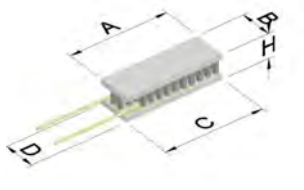
Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
SS-AA-140	1.55	7.22	8.4	72	1.6	9.6	9.6	9.6	9.6
SS-AB-140	1	4.77		73	1.9				
SS-AC-140	0.8	3.88		73	2.1				
SS-AD-140	0.7	3.28		73	2.3				
SS-AE-140	0.55	2.65		73	2.6				
SS-BA-008	3.5	0.93	0.48	72	1.6	2	4	4	4
SS-BB-008	2.3	0.62		73	1.9				
SS-BC-008	1.9	0.5		73	2.1				
SS-BD-008	1.6	0.42		73	2.3				
SS-BE-008	1.3	0.34		73	2.6				
SS-BA-014	3.5	1.62	0.84	72	1.6	4	4	4	4
SS-BB-014	2.3	1.08		73	1.9				
SS-BC-014	1.9	0.87		73	2.1				
SS-BD-014	1.6	0.74		73	2.3				
SS-BE-014	1.3	0.6		73	2.6				
SS-BA-016	3.5	1.9	0.96	72	1.6	4	4	6	4
SS-BB-016	2.3	1.2		73	1.9				
SS-BC-016	1.9	1		73	2.1				
SS-BD-016	1.6	0.9		73	2.3				
SS-BE-016	1.3	0.7		73	2.6				
SS-BA-022	3.5	2.6	1.3	72	1.6	4	6	4	6
SS-BB-022	2.3	1.69		73	1.9				
SS-BC-022	1.9	1.36		73	2.1				
SS-BD-022	1.6	1.16		73	2.3				
SS-BE-022	1.3	0.94		73	2.6				
SS-BA-024	3.5	2.8	1.4	72	1.6	4	6	6	6
SS-BB-024	2.3	1.8		73	1.9				
SS-BC-024	1.9	1.5		73	2.1				
SS-BD-024	1.6	1.3		73	2.3				
SS-BE-024	1.3	1.1		73	2.6				
SS-BA-034	3.5	3.9	2.0	72	1.6	6	6	6	6
SS-BB-034	2.3	2.62		73	1.9				
SS-BC-034	1.9	2.11		73	2.1				
SS-BD-034	1.6	1.8		73	2.3				
SS-BE-034	1.3	1.46		73	2.6				
SS-BA-036	3.5	4.2	2.2	72	1.6	6	6	8	6
SS-BB-036	2.3	2.7		73	1.9				
SS-BC-036	1.9	2.2		73	2.1				
SS-BD-036	1.6	1.9		73	2.3				
SS-BE-036	1.3	1.6		73	2.6				
SS-BA-046	3.5	5.3	2.8	72	1.6	6	8	6	8
SS-BB-046	2.3	3.54		73	1.9				
SS-BC-046	1.9	2.85		73	2.1				
SS-BD-046	1.6	2.43		73	2.3				
SS-BE-046	1.3	1.99		73	2.6				
SS-BA-060	3.5	7	3.6	72	1.6	8	8	8	8
SS-BB-060	2.3	4.62		73	1.9				
SS-BC-060	1.9	3.72		73	2.1				
SS-BD-060	1.6	3.18		73	2.3				
SS-BE-060	1.3	2.58		73	2.6				
SS-BA-064	3.5	7.4	3.8	72	1.6	8	8	10	8
SS-BB-064	2.3	4.9		73	1.9				
SS-BC-064	1.9	4		73	2.1				
SS-BD-064	1.6	3.4		73	2.3				
SS-BE-064	1.3	2.8		73	2.6				
SS-BA-096	3.5	11.1	5.8	72	1.6	10	10	10	10
SS-BB-096	2.3	7.39		73	1.9				
SS-BC-096	1.9	5.95		73	2.1				
SS-BD-096	1.6	5.08		73	2.3				
SS-BE-096	1.3	4.12		73	2.6				
SS-BA-100	3.5	11.6	6.0	72	1.6	10	10	12	10
SS-BB-100	2.3	7.6		73	1.9				
SS-BC-100	1.9	6.2		73	2.1				
SS-BD-100	1.6	5.3		73	2.3				
SS-BE-100	1.3	4.3		73	2.6				
SS-BA-116	3.5	13.5	7.0	72	1.6	10	12	10	12
SS-BB-116	2.3	8.93		73	1.9				
SS-BC-116	1.9	7.19		73	2.1				
SS-BD-116	1.6	6.15		73	2.3				
SS-BE-116	1.3	4.98		73	2.6				
SS-BA-120	3.5	13.9	7.2	72	1.6	10	12	12	12
SS-BB-120	2.3	9.1		73	1.9				
SS-BC-120	1.9	7.4		73	2.1				
SS-BD-120	1.6	6.4		73	2.3				
SS-BE-120	1.3	5.2		73	2.6				
SS-BA-140	3.5	16.3	8.4	72	1.6	12	12	12	12
SS-BB-140	2.3	10.7		73	1.9				
SS-BC-140	1.9	8.74		73	2.1				
SS-BD-140	1.6	7.39		73	2.3				
SS-BE-140	1.3	5.97		73	2.6				

linear small single stage thermoelectric coolers (SL series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
SL-AA-010	1.6	0.52	0.6	72	1.2	4.8	1.6	4.8	1.6
SL-AB-010	1	0.34		73	1.5				
SL-AC-010	0.8	0.28		73	1.7				
SL-AD-010	0.7	0.23		73	1.9				
SL-AE-010	0.55	0.19		73	2.2				
SL-AA-014	1.6	0.73	0.84	72	1.2	6.4	1.6	6.4	1.6
SL-AB-014	1	0.48		73	1.5				
SL-AC-014	0.8	0.39		73	1.7				
SL-AD-014	0.7	0.32		73	1.9				
SL-AE-014	0.55	0.27		73	2.2				
SL-AA-016	1.6	0.83	0.96	72	1.2	4.8	2.4	4.8	2.4
SL-AB-016	1	0.54		73	1.5				
SL-AC-016	0.8	0.45		73	1.7				
SL-AD-016	0.7	0.37		73	1.9				
SL-AE-016	0.55	0.3		73	2.2				
SL-AA-022	1.6	1.14	1.3	72	1.2	6.4	2.4	6.4	2.4
SL-AB-022	1	0.74		73	1.5				
SL-AC-022	0.8	0.62		73	1.7				
SL-AD-022	0.7	0.51		73	1.9				
SL-AE-022	0.55	0.42		73	2.2				
SL-AA-030	1.6	1.56	1.8	72	1.6	6.4	3.2	6.4	3.2
SL-AB-030	1	1.02		73	1.9				
SL-AC-030	0.8	0.84		73	2.1				
SL-AD-030	0.7	0.69		73	2.3				
SL-AE-030	0.55	0.57		73	2.6				
SL-AA-038	1.6	1.98	2.3	72	1.6	8	3.2	8	3.2
SL-AB-038	1	1.29		73	1.9				
SL-AC-038	0.8	1.06		73	2.1				
SL-AD-038	0.7	0.87		73	2.3				
SL-AE-038	0.55	0.72		73	2.6				
SL-AA-044	1.6	2.28	2.6	72	1.6	9.6	3.2	9.6	3.2
SL-AB-044	1	1.5		73	1.9				
SL-AC-044	0.8	1.23		73	2.1				
SL-AD-044	0.7	1.01		73	2.3				
SL-AE-044	0.55	0.84		73	2.6				
SL-AA-056	1.6	2.91	3.4	72	1.6	8	4.8	8	4.8
SL-AB-056	1	1.9		73	1.9				
SL-AC-056	0.8	1.57		73	2.1				
SL-AD-056	0.7	1.29		73	2.3				
SL-AE-056	0.55	1.06		73	2.6				
SL-AA-068	1.6	3.57	4.1	72	1.6	9.6	4.8	9.6	4.8
SL-AB-068	1	2.31		73	1.9				
SL-AC-068	0.8	1.9		73	2.1				
SL-AD-068	0.7	1.56		73	2.3				
SL-AE-068	0.55	1.29		73	2.6				
SL-AA-072	1.6	3.95	4.5	72	1.6	8	6.4	8	6.4
SL-AB-072	1	2.58		73	1.9				
SL-AC-072	0.8	2.13		73	2.1				
SL-AD-072	0.7	1.75		73	2.3				
SL-AE-072	0.55	1.44		73	2.6				
SL-BA-010	3.4	1.16	0.6	72	1.6	6	2	6	2
SL-BB-010	2.3	0.77		73	1.9				
SL-BC-010	1.9	0.62		73	2.1				
SL-BD-010	1.6	0.53		73	2.3				
SL-BE-010	1.3	0.43		73	2.6				
SL-BA-014	3.4	1.62	0.84	72	1.6	8	2	8	2
SL-BB-014	2.3	1.08		73	1.9				
SL-BC-014	1.9	0.87		73	2.1				
SL-BD-014	1.6	0.74		73	2.3				
SL-BE-014	1.3	0.6		73	2.6				
SL-BA-018	3.4	2.09	1.1	72	1.6	10	2	10	2
SL-BB-018	2.3	1.39		73	1.9				
SL-BC-018	1.9	1.12		73	2.1				
SL-BD-018	1.6	0.95		73	2.3				
SL-BE-018	1.3	0.77		73	2.6				
SL-BA-022	3.4	2.55	1.3	72	1.6	12	2	12	2
SL-BB-022	2.3	1.69		73	1.9				
SL-BC-022	1.9	1.36		73	2.1				
SL-BD-022	1.6	1.17		73	2.3				
SL-BE-022	1.3	0.95		73	2.6				
SL-BA-030	3.4	3.48	1.8	72	1.6	8	4	8	4
SL-BB-030	2.3	2.31		73	1.9				
SL-BC-030	1.9	1.86		73	2.1				
SL-BD-030	1.6	1.59		73	2.3				
SL-BE-030	1.3	1.29		73	2.6				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)



Option with lead wires perpendicular to long side is also available

linear small single stage thermoelectric coolers (SL series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
SL-BA-038	3.4	4.41	2.3	72	1.6	10	4	10	4
SL-BB-038	2.3	2.93		73	1.9				
SL-BC-038	1.9	2.35		73	2.1				
SL-BD-038	1.6	2.01		73	2.3				
SL-BE-038	1.3	1.63		73	2.6				
SL-BA-044	3.4	5.1	2.6	72	1.6	12	4	12	4
SL-BB-044	2.3	3.39		73	1.9				
SL-BC-044	1.9	2.73		73	2.1				
SL-BD-044	1.6	2.33		73	2.3				
SL-BE-044	1.3	1.89		73	2.6				
SL-BA-056	3.4	6.5	3.4	72	1.6	10	6	10	6
SL-BB-056	2.3	4.31		73	1.9				
SL-BC-056	1.9	3.47		73	2.1				
SL-BD-056	1.6	2.97		73	2.3				
SL-BE-056	1.3	2.41		73	2.6				
SL-BA-068	3.4	7.89	4.1	72	1.6	12	6	12	6
SL-BB-068	2.3	5.24		73	1.9				
SL-BC-068	1.9	4.22		73	2.1				
SL-BD-068	1.6	3.6		73	2.3				
SL-BE-068	1.3	2.92		73	2.6				
SL-BA-076	3.4	8.82	4.5	72	1.6	10	8	10	8
SL-BB-076	2.3	5.85		73	1.9				
SL-BC-076	1.9	4.71		73	2.1				
SL-BD-076	1.6	4.03		73	2.3				
SL-BE-076	1.3	3.27		73	2.6				
SL-BA-092	3.4	10.7	5.5	72	1.6	12	8	12	8
SL-BB-092	2.3	7.05		73	1.9				
SL-BC-092	1.9	5.74		73	2.1				
SL-BD-092	1.6	4.84		73	2.3				
SL-BE-092	1.3	3.92		73	2.6				
SL-CA-018	9.7	5.8	1.1	72	3.0	15	3	15	3
SL-CB-018	6.3	3.8		73	2.9				
SL-CC-018	5.2	3.1		73	3.1				
SL-CD-018	4.3	2.6		73	3.3				
SL-CE-018	3.5	2.1		73	3.6				
SL-CF-018	2.7	1.6		73	4.1				
SL-CA-022	9.7	7.1	1.3	72	3.0	18	3	18	3
SL-CB-022	6.3	4.7		73	2.9				
SL-CC-022	5.2	3.8		73	3.1				
SL-CD-022	4.3	3.2		73	3.3				
SL-CE-022	3.5	2.6		73	3.6				
SL-CF-022	2.7	2		73	4.1				
SL-CA-038	9.7	12.2	2.3	72	3.0	15	6	15	6
SL-CB-038	6.3	8.1		73	2.9				
SL-CC-038	5.2	6.6		73	3.1				
SL-CD-038	4.3	5.6		73	3.3				
SL-CE-038	3.5	4.5		73	3.6				
SL-CF-038	2.7	3.5		73	4.1				
SL-CA-044	9.7	14.2	2.6	72	3.0	18	6	18	6
SL-CB-044	6.3	9.4		73	2.9				
SL-CC-044	5.2	7.6		73	3.1				
SL-CD-044	4.3	6.4		73	3.3				
SL-CE-044	3.5	5.2		73	3.6				
SL-CF-044	2.7	4		73	4.1				
SL-CA-052	9.7	16.7	3.1	72	3.0	21	6	21	6
SL-CB-052	6.3	11.1		73	2.9				
SL-CC-052	5.2	9		73	3.1				
SL-CD-052	4.3	7.6		73	3.3				
SL-CE-052	3.5	6.1		73	3.6				
SL-CF-052	2.7	4.7		73	4.1				
SL-CA-056	9.7	18	3.7	72	3.0	15	9	15	9
SL-CB-056	6.3	11.9		73	2.9				
SL-CC-056	5.2	9.7		73	3.1				
SL-CD-056	4.3	8.2		73	3.3				
SL-CE-056	3.5	6.6		73	3.6				
SL-CF-056	2.7	5.1		73	4.1				
SL-CA-068	9.7	21.9	4.1	72	3.0	18	9	18	9
SL-CB-068	6.3	14.5		73	2.9				
SL-CC-068	5.2	11.8		73	3.1				
SL-CD-068	4.3	9.9		73	3.3				
SL-CE-068	3.5	8		73	3.6				
SL-CF-068	2.7	6.2		73	4.1				
SL-CA-076	9.7	24.5	4.6	72	3.0	15	12	15	12
SL-CB-076	6.3	16.2		73	2.9				
SL-CC-076	5.2	13.2		73	3.1				
SL-CD-076	4.3	11.1		73	3.3				
SL-CE-076	3.5	9		73	3.6				
SL-CF-076	2.7	6.9		73	4.1				

linear small single stage thermoelectric coolers (SL series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
SL-CA-080	9.7	25.8	4.8	72	3.0	21	9	21	9
SL-CB-080	6.3	17		73	2.9				
SL-CC-080	5.2	13.8		73	3.1				
SL-CD-080	4.3	11.7		73	3.3				
SL-CE-080	3.5	9.4		73	3.6				
SL-CF-080	2.7	7.3		73	4.1				
SL-CA-092	9.7	29.6	5.5	72	3.0	18	12	18	12
SL-CB-092	6.3	19.6		73	2.9				
SL-CC-092	5.2	15.9		73	3.1				
SL-CD-092	4.3	13.4		73	3.3				
SL-CE-092	3.5	10.9		73	3.6				
SL-CF-092	2.7	8.4		73	4.1				
SL-CA-096	9.7	29.6	5.8	72	3.0	15	3	15	3
SL-CB-096	6.3	19.6		73	2.9				
SL-CC-096	5.2	15.9		73	3.1				
SL-CD-096	4.3	13.4		73	3.3				
SL-CE-096	3.5	10.9		73	3.6				
SL-CF-096	2.7	8.4		73	4.1				
SL-CA-108	9.7	34.8	6.5	72	3.0	21	12	21	12
SL-CB-108	6.3	23		73	2.9				
SL-CC-108	5.2	18.7		73	3.1				
SL-CD-108	4.3	15.8		73	3.3				
SL-CE-108	3.5	12.7		73	3.6				
SL-CF-108	2.7	9.8		73	4.1				
SL-CA-116	9.7	37.4	7	72	3.0	18	15	18	15
SL-CB-116	6.3	24.7		73	2.9				
SL-CC-116	5.2	20.1		73	3.1				
SL-CD-116	4.3	16.9		73	3.3				
SL-CE-116	3.5	13.7		73	3.6				
SL-CF-116	2.7	10.6		73	4.1				
SL-CA-136	9.7	43.8	8.1	72	3.0	21	15	21	15
SL-CB-136	6.3	29		73	2.9				
SL-CC-136	5.2	23.5		73	3.1				
SL-CD-136	4.3	19.6		73	3.3				
SL-CE-136	3.5	16.1		73	3.6				
SL-CF-136	2.7	12.4		73	4.1				
SL-CA-140	9.7	45.1	8.4	72	3.0	18	18	18	18
SL-CB-140	6.3	29.8		73	2.9				
SL-CC-140	5.2	24.2		73	3.1				
SL-CD-140	4.3	20.4		73	3.3				
SL-CE-140	3.5	16.5		73	3.6				
SL-CF-140	2.7	12.7		73	4.1				
SL-CA-164	9.7	52.8	9.8	72	3.0	21	18	21	18
SL-CB-164	6.3	34.9		73	2.9				
SL-CC-164	5.2	28.4		73	3.1				
SL-CD-164	4.3	23.9		73	3.3				
SL-CE-164	3.5	19.4		73	3.6				
SL-CF-164	2.7	14.9		73	4.1				
SL-CA-192	9.7	61.9	11.5	72	3.0	21	21	21	21
SL-CB-192	6.3	40.8		73	2.9				
SL-CC-192	5.2	33.3		73	3.1				
SL-CD-192	4.3	28		73	3.3				
SL-CE-192	3.5	22.7		73	3.6				
SL-CF-192	2.7	17.5		73	4.1				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)

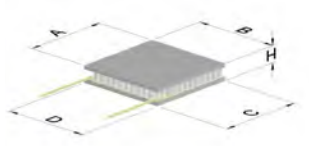
Contact us

small single stage thermoelectric coolers with increased cooling capacity up to 60% (SI series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
SI-AA-006	1.5	0.32	0.4	71	1.1	1.2	1.8	1.2	2.6
SI-AB-006	0.9	0.21		72	1.4				
SI-AC-006	0.8	0.17		72	1.6				
SI-AD-006	0.6	0.14		72	1.8				
SI-AE-006	0.5	0.12		72	2.1				
SI-AA-022	1.5	1.20	1.4	72	1.1	3.2	3.2	3.2	3.2
SI-AB-022	0.9	0.80		73	1.4				
SI-AC-022	0.8	0.65		74	1.6				
SI-AD-022	0.6	0.51		74	1.8				
SI-AE-022	0.5	0.45		74	2.1				
SI-AA-046	1.4	2.3	2.8	70	1.1	4.4	4.4	4.4	4.4
SI-AB-046	0.9	1.5		72	1.4				
SI-AC-046	0.7	1.2		72	1.6				
SI-AD-046	0.6	1.1		72	1.8				
SI-AE-046	0.5	0.8		72	2.1				
SI-AA-142	1.4	7.5	8.9	71	1.1	7.4	7.4	7.4	7.4
SI-AB-142	0.9	4.8		72	1.4				
SI-AC-142	0.7	4		72	1.6				
SI-AD-142	0.6	3.3		72	1.8				
SI-AE-142	0.5	2.7		72	2.1				
SI-BA-014	3.0	1.6	0.9	71	1.6	3.4	3.4	3.4	3.4
SI-BB-014	2.0	1.05		72	1.9				
SI-BC-014	1.65	0.85		72	2.1				
SI-BD-014	1.35	0.71		72	2.3				
SI-BE-014	1.1	0.6		72	2.6				
SI-BA-064	3.0	7.2	4.0	70	1.6	8	8	8	8
SI-BB-064	2.0	4.8		72	1.9				
SI-BC-064	1.6	3.9		72	2.1				
SI-BD-064	1.3	3.2		72	2.3				
SI-BE-064	1.1	2.6		72	2.6				
SI-BA-034	3.0	3.7	2.1	70	1.6	5	5	5	5
SI-BB-034	1.9	2.5		72	1.9				
SI-BC-034	1.6	2.0		72	2.1				
SI-BD-034	1.3	1.7		72	2.3				
SI-BE-034	1.1	1.4		72	2.6				
SI-BA-144	3.0	15.5	8.8	70	1.6	9.8	9.8	9.8	9.8
SI-BB-144	1.9	10.2		71	1.9				
SI-BC-144	1.6	8.4		72	2.1				
SI-BD-144	1.3	7.1		72	2.3				
SI-BE-144	1.1	5.7		72	2.6				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)



standard pyramidal design cascade multi stage thermoelectric coolers (MS series)

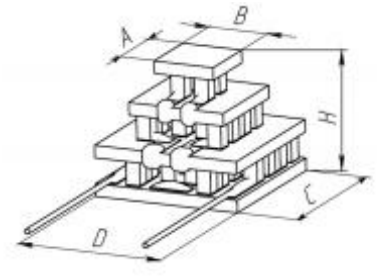
Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
MS-2-AA-240	1.17	0.65	1.8	95	2.7	3.2	3.2	4.8	4.8
MS-2-AB-240	0.76	0.41		97	3.3				
MS-2-AC-240	0.62	0.34		97	3.7				
MS-2-AD-240	0.52	0.28		97	4.1				
MS-2-AE-240	0.42	0.23		97	4.7				
MS-2-AA-870	1.2	1.11	3.5	98	2.7	4.8	4.8	6.4	6.4
MS-2-AB-870	0.8	0.74		100	3.3				
MS-2-AC-870	0.65	0.6		100	3.7				
MS-2-AD-870	0.54	0.51		100	4.1				
MS-2-AE-870	0.44	0.41		100	4.7				
MS-2-AA-280	1.12	1.23	3.5	95	2.7	4.8	4.8	6.4	6.4
MS-2-AB-280	0.73	0.81		97	3.3				
MS-2-AC-280	0.6	0.65		97	3.7				
MS-2-AD-280	0.51	0.54		97	4.1				
MS-2-AE-280	0.42	0.42		97	4.7				
MS-2-AA-811	1.25	1.48	5.5	101	2.7	4.8	4.8	8	8
MS-2-AB-811	0.84	0.98		103	3.3				
MS-2-AC-811	0.68	0.8		103	3.7				
MS-2-AD-811	0.57	0.67		103	4.1				
MS-2-AE-811	0.46	0.54		103	4.7				
MS-2-AA-031	1.14	1.96	5.6	96	2.7	4.8	4.8	8	8
MS-2-AB-031	0.77	1.31		98	3.3				
MS-2-AC-031	0.61	1.01		98	3.7				
MS-2-AD-031	0.53	0.89		98	4.1				
MS-2-AE-031	0.41	0.71		98	4.7				
MS-2-AA-261	1.15	2.57	6.9	95	2.7	6.4	6.4	8	9.6
MS-2-AB-261	0.74	1.7		97	3.3				
MS-2-AC-261	0.6	1.38		97	3.7				
MS-2-AD-261	0.53	1.19		97	4.1				
MS-2-AE-261	0.41	0.95		97	4.7				
MS-2-AA-681	1.22	2.68	8.1	98	2.7	6.4	6.4	9.6	9.6
MS-2-AB-681	0.81	1.74		100	3.3				
MS-2-AC-681	0.65	1.42		100	3.7				
MS-2-AD-681	0.54	1.21		100	4.1				
MS-2-AE-681	0.43	0.98		100	4.7				
MS-2-AA-202	1.11	3.08	8.2	93	2.7	6.4	6.4	9.6	9.6
MS-2-AB-202	0.75	2.02		95	3.3				
MS-2-AC-202	0.6	1.68		95	3.7				
MS-2-AD-202	0.48	1.43		95	4.1				
MS-2-AE-202	0.39	1.12		95	4.7				
MS-3-AA-001	0.94	0.62	3.4	108	3.8	3.2	3.2	6.4	6.4
MS-3-AB-001	0.62	0.41		110	4.7				
MS-3-AC-001	0.49	0.36		110	5.3				
MS-3-AD-001	0.44	0.29		110	5.9				
MS-3-AE-001	0.36	0.21		110	6.8				
MS-3-AA-041	1.04	0.73	5.3	114	3.8	3.2	3.2	8	8
MS-3-AB-041	0.68	0.48		116	4.7				
MS-3-AC-041	0.57	0.37		116	5.3				
MS-3-AD-041	0.45	0.33		116	5.9				
MS-3-AE-041	0.37	0.27		116	6.8				
MS-3-AA-671	1.03	0.95	6.5	113	3.8	3.2	4.8	8	9.6
MS-3-AB-671	0.67	0.64		115	4.7				
MS-3-AC-671	0.55	0.5		115	5.3				
MS-3-AD-671	0.46	0.41		115	5.9				
MS-3-AE-671	0.37	0.34		115	6.8				
MS-3-AA-081	0.97	1.08	6.4	110	3.8	4.8	4.8	8	9.6
MS-3-AB-081	0.62	0.69		113	4.7				
MS-3-AC-081	0.52	0.57		113	5.3				
MS-3-AD-081	0.44	0.49		113	5.9				
MS-3-AE-081	0.36	0.39		113	6.8				
MS-3-AA-422	0.98	1.36	8	110	3.8	3.2	4.8	9.6	9.6
MS-3-AB-422	0.63	0.9		113	4.7				
MS-3-AC-422	0.51	0.72		113	5.3				
MS-3-AD-422	0.45	0.61		113	5.9				
MS-3-AE-422	0.32	0.49		113	6.8				
MS-2-BA-810	2.8	0.54	0.82	100	2.7	2.5	2.5	4	4
MS-2-BB-810	1.8	0.35		101	3.3				
MS-2-BC-810	1.5	0.29		101	3.7				
MS-2-BD-810	1.3	0.24		101	4.1				
MS-2-BE-810	1.0	0.2		101	4.7				
MS-2-BA-240	2.6	1.4	1.8	96	2.7	4	4	6	6
MS-2-BB-240	1.7	0.9		97	3.3				
MS-2-BC-240	1.4	0.74		97	3.7				
MS-2-BD-240	1.2	0.66		97	4.1				
MS-2-BE-240	0.9	0.51		97	4.7				

standard pyramidal design cascade multi stage thermoelectric coolers (MS series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
MS-2-BA-870	2.6	2.51	3.5	98	2.7	6	6	8	8
MS-2-BB-870	1.8	1.66		99	3.3				
MS-2-BC-870	1.4	1.35		99	3.7				
MS-2-BD-870	1.2	1.13		99	4.1				
MS-2-BE-870	0.9	0.92		99	4.7				
MS-2-BA-811	2.8	3.34	5.5	101	2.7	4	6	10	10
MS-2-BB-811	1.9	2.2		104	3.3				
MS-2-BC-811	1.5	1.82		104	3.7				
MS-2-BD-811	1.3	1.5		104	4.1				
MS-2-BE-811	1	1.21		104	4.7				
MS-2-BA-261	2.6	5.5	6.8	94	2.7	8	8	10	12
MS-2-BB-261	1.7	3.63		96	3.3				
MS-2-BC-261	1.3	2.95		96	3.7				
MS-2-BD-261	1.1	2.5		96	4.1				
MS-2-BE-261	0.9	2		96	4.7				
MS-2-BA-202	2.5	6.91	8.2	93	2.7	8	8	12	12
MS-2-BB-202	1.6	4.6		95	3.3				
MS-2-BC-202	1.3	3.71		95	3.7				
MS-2-BD-202	1.1	3.1		95	4.1				
MS-2-BE-202	0.9	2.59		95	4.7				
MS-3-BA-840	2.3	0.56	1.8	113	3.8	2.5	2.5	6	6
MS-3-BB-840	1.5	0.37		115	4.7				
MS-3-BC-840	1.2	0.3		115	5.3				
MS-3-BD-840	1	0.25		115	5.9				
MS-3-BE-840	0.8	0.2		115	6.8				
MS-3-BA-001	2.1	1.42	3.4	107	3.8	4	4	8	8
MS-3-BB-001	1.4	0.94		109	4.7				
MS-3-BC-001	1.1	0.8		109	5.3				
MS-3-BD-001	1	0.65		109	5.9				
MS-3-BE-001	0.8	0.53		109	6.8				
MS-3-BA-041	2.3	1.64	5.3	114	3.8	4	4	10	10
MS-3-BB-041	1.5	1.08		115	4.7				
MS-3-BC-041	1.2	0.88		115	5.3				
MS-3-BD-041	1	0.74		115	5.9				
MS-3-BE-041	0.9	0.6		115	6.8				
MS-3-BA-081	2.2	2.41	6.4	110	3.8	6	6	10	12
MS-3-BB-081	1.4	1.61		111	4.7				
MS-3-BC-081	1.2	1.31		111	5.3				
MS-3-BD-081	1	1.11		111	5.9				
MS-3-BE-081	0.8	0.89		111	6.8				
MS-3-BA-422	2.2	3.1	7.9	110	3.8	6	6	12	12
MS-3-BB-422	1.5	2.05		111	4.7				
MS-3-BC-422	1.2	1.62		111	5.3				
MS-3-BD-422	1	1.37		111	5.9				
MS-3-BE-422	0.8	1.1		111	6.8				
MS-2-CA-261	4.7	10.1	6.8	96	4.8	12	12	15	18
MS-2-CB-261	3.7	8.15		97	5.2				
MS-2-CC-261	3.2	6.65		97	5.6				
MS-2-CD-261	2.6	5.6		97	6.2				
MS-2-CE-261	2	4.32		97	7.1				
MS-2-CA-202	4.5	12.8	8.2	96	4.8	12	12	18	18
MS-2-CB-202	3.6	10.4		95	5.2				
MS-2-CC-202	3.1	8.77		95	5.6				
MS-2-CD-202	2.5	7.1		95	6.2				
MS-2-CE-202	1.9	5.46		95	7.1				
MS-3-CA-061	3.8	4.2	5.3	109	6.7	9	9	15	15
MS-3-CB-061	3.1	3.41		110	7.3				
MS-3-CC-061	2.6	2.91		110	7.9				
MS-3-CD-061	2.1	2.37		110	8.8				
MS-3-CE-061	1.6	1.8		110	10.2				
MS-3-CA-633	5.4	14	10.7	104	5.8	9	12	21	21
MS-3-CB-633	3.5	9.32		107	6.7				
MS-3-CC-633	3	7.62		108	7.3				
MS-3-CD-633	2.5	6.45		108	7.9				
MS-3-CE-633	2	5.21		108	8.8				
MS-3-CF-633	1.5	4.04		108	10.2				
MS-4-CA-653	3.3	4.7	10.4	119	6.7	6	9	21	21
MS-4-CB-653	2.7	3.79		119	7.3				
MS-4-CC-653	2.3	3.2		120	7.9				
MS-4-CD-653	1.9	2.61		120	8.8				
MS-4-CE-653	1.4	2		120	10.2				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)



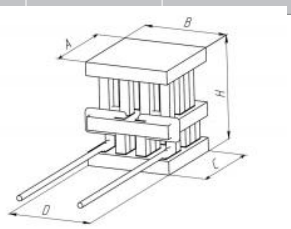
cascade multi stage thermoelectric coolers with enlarged cold surface (ME series)

increased surface & mechanical strength of top cascade allow to cool relatively large objects

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
ME-2-ABF-020	0.8	0.21	0.85	97	4.0	3.2	3.2	3.2	3.2
ME-2-AAC-020	1.2	0.31		96	3.2				
ME-2-ACG-024	0.65	0.35	1.85	98	4.7	4.8	4.8	4.8	4.8
ME-2-ABF-024	0.82	0.45		98	4.0				
ME-2-AAC-024	1.2	0.67		97	3.2				
ME-2-ACG-680	0.6	0.74	3.6	95	4.7	8	8	8	8
ME-2-ABF-680	0.74	0.92		95	4.0				
ME-2-AAC-680	1.14	1.41		94	3.2				
ME-2-ACG-231	0.64	1.11	5.7	98	4.7	8	8	8	8
ME-2-ABF-231	0.81	1.40		98	4.0				
ME-2-AAC-231	1.2	2.15		97	3.2				
ME-2-BCG-030	1.5	0.55	1.35	100	4.7	4	4	4	6
ME-2-BBF-030	1.8	0.69		100	4.0				
ME-2-BAC-030	2.8	1.04		99	3.2				
ME-2-ACG-480	1.4	1.61	3.6	96	4.7	8	8	8	8
ME-2-ABF-480	1.8	2.08		96	4.0				
ME-2-AAC-480	2.5	3.05		95	3.2				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)



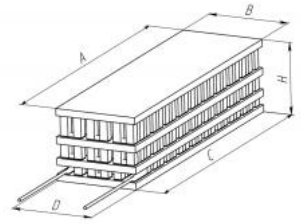
linear cascade multi stage thermoelectric coolers with enlarged cold surface (ML series)

variation of ME series for cooling long objects (CCDs, detectror arrays,…)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
ML-2-ACG-3072	0.6	0.53	2.55	96	4.7	3.2	9.6	3.2	9.6
ML-2-ABE-3072	0.76	0.68		96	4				
ML-2-AAC-3072	1.16	1.02		95	3.2				
ML-2-ACG-2560	0.6	0.42	2.1	95	4.7	3.2	8	3.2	8
ML-2-ABE-2560	0.76	0.56		95	4				
ML-2-AAC-2560	1.15	0.81		94	3.2				
ML-2-ACG-2048	0.61	0.33	1.6	96	4.7	3.2	6.4	3.2	6.4
ML-2-ABE-2048	0.78	0.42		96	4				
ML-2-AAC-2048	1.16	0.61		95	3.2				
ML-2-BCG-4800	1.37	1.20	2.6	96	4.7	4	12	4	12
ML-2-BBE-4800	1.75	1.55		96	4				
ML-2-BAC-4800	2.6	2.29		95	3.2				
ML-2-BCG-4000	1.4	0.98	2.1	95	4.7	4	10	4	10
ML-2-BBE-4000	1.75	1.23		95	4				
ML-2-BAC-4000	2.6	1.84		94	3.2				
ML-2-BCG-3200	1.4	0.73	1.6	96	4.7	4	8	4	8
ML-2-BBE-3200	1.75	0.95		96	4				
ML-2-BAC-3200	2.64	1.4		95	3.2				
ML-2-CDH-1890	3.7	4.4	4.7	100	6.9	9	21	9	21
ML-2-CCG-1890	4.1	5.4		100	6.2				
ML-2-CBE-1890	5.2	6.9		100	5.5				
ML-2-CAC-1890	7.8	10.2		99	5.1				
ML-2-CDH-1620	3.4	3.8	4	100	6.9	9	18	9	18
ML-2-CCG-1620	4.1	4.6		100	6.2				
ML-2-CBE-1620	5.2	5.9		100	5.5				
ML-2-CAC-1620	7.8	8.7		99	5.1				
ML-2-CDH-1350	3.4	3.1	4	99	6.9	9	15	9	15
ML-2-CCG-1350	4.1	3.8		99	6.2				
ML-2-CBE-1350	5.1	4.9		99	5.5				
ML-2-CAC-1350	7.6	7.2		98	5.1				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)

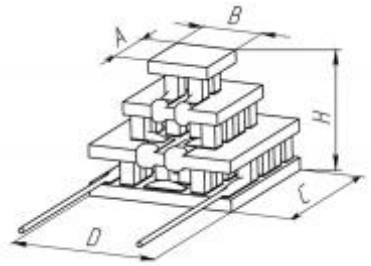


cascade multi stage thermoelectric coolers with increased TE pellet (cooling) density (MI series)

Part Number	Imax (A)	Qmax (W)	Umax (V)	dTmax (K)	H (mm)	Top A×B (mm)		Bottom C×D (mm)	
MI-2-AAA-820	1.25	0.45	1.3	96	2.0	3	3	3	3
MI-2-ABB-820	0.85	0.30		98	2.6				
MI-2-ACC-820	0.65	0.24		98	3.0				
MI-2-AEE-820	0.55	0.20		99	3.4				
MI-2-ADD-820	0.45	0.16		99	4.0				
MI-2-AAA-440	1.25	0.70	2.1	97	2.7	2.6	2.6	3.8	3.8
MI-2-ABB-440	0.85	0.45		99	3.3				
MI-2-ACC-440	0.65	0.37		100	3.7				
MI-2-AEE-440	0.55	0.31		100	4.1				
MI-2-ADD-440	0.45	0.25		101	4.7				
MI-2-AAA-480	1.25	1.36	3.7	96	2.7	3.2	3.2	5	5
MI-2-ABB-480	0.85	0.88		98	3.3				
MI-2-ACC-480	0.65	0.71		99	3.7				
MI-2-AEE-480	0.55	0.60		99	4.1				
MI-2-ADD-480	0.45	0.48		100	4.7				
MI-2-AAA-231	1.25	2.16	5.8	96	2.7	3.8	3.8	6.2	6.2
MI-2-ABB-231	0.85	1.36		99	3.3				
MI-2-ACC-231	0.65	1.1		100	3.7				
MI-2-AEE-231	0.55	0.93		100	4.1				
MI-2-ADD-231	0.45	0.75		101	4.7				
MI-2-A3A-402	1.2	3.4	8.6	93	2.7	5	5	7.4	7.4
MI-2-A3B-402	0.75	2.15		96	3.3				
MI-2-A3C-402	0.6	1.75		96	3.7				
MI-2-A3E-402	0.5	1.46		97	4.1				
MI-2-A3D-402	0.4	1.18		97	4.7				
MI-3-A4A-622	1.0	1.4	8.6	111	3.8	3.2	3.2	7.4	7.4
MI-3-A4B-622	0.65	0.92		113	4.7				
MI-3-A4C-622	0.55	0.75		114	5.3				
MI-3-A4E-622	0.45	0.66		114	5.9				
MI-3-A4D-622	0.35	0.5		115	6.8				
MI-4-A4A-232	1.0	0.32	8.8	128	4.9	2.6	2.6	7.4	7.4
MI-4-A4B-232	0.65	0.21		129	6.1				
MI-4-A4C-232	0.55	0.17		130	6.9				
MI-4-A4E-232	0.45	0.14		130	7.7				
MI-4-A4D-232	0.35	0.12		130	8.9				

Imax (A)	TEC current at dTmax
Qmax (W)	Maximum cooling capacity (I=Imax, dT=0)
Umax (V)	TEC voltage at dTmax
dTmax (K)	Maximum temperature difference between TEC cold and hot side (I=Imax, Qmax)
H (mm)	TEC height
Top AxB (mm)	Dimensions of the TEC cold side
Bottom CxD (mm)	Dimensions of the TEC hot side

All TEC performance characteristics given for +30 °C in vacuum; to estimate Q at dT different from dTmax use equation Q = Qmax (1-dT/dTmax); to estimate dT at Q different from Qmax use equation dT = dTmax (1-Q/Qmax)



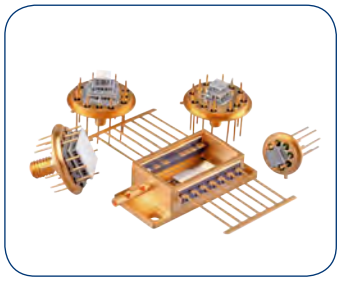
manufacturing options for all small thermoelectric cooler models

1. TEC substrates	a) High Purity Aluminum Oxide (Al_2O_3, 99.6 %) b) Aluminum Oxide (Al_2O_3, 96 %) c) Aluminum Nitride
2. TEC internal solder	a) PbSn (m/p: +183 °C) on request; b) SnBi (m/p: +230 °C, Pb-free) **by default;** c) AuSn (m/p: +280 °C, Pb-free) on request;
3. TEC outer surfaces treatment	a) Naked ceramic (no metallization) b) Au plated (ready for wire bonding process) c) Metallized and pretinned with: - InSn (m/p: +117 °C); - BiSn (m/p: +138 °C); - In (m/p: +157 °C); d) Other options can be considered on request
4. TEC current leads	a) Pretinned copper wires (length can be varied on request) b) Insulated wires (length can be varied on request) c) Cu posts Au plated
5. Thermistor	Can be installed to the TEC cold/hot side on request

Contact us

associated products

assemblies



A large part of our standard TECs are installed into various sockets, packages and housings. Especially for high volume, this assembly is a rather complicated technological process, requiring time, specialized equipment and highly skilled staff. Our partners have years of experience in assembling small TECs into a wide range of standard sockets and housings like TO-cans (TO-8, TO-5, TO-3), Butterfly, etc., using solders or thermally conductive epoxies meeting NASA low outgassing standards. Different types of thermistors can also be installed to the TEC cold/hot sides. Save time and money – get in touch with us now to discuss your assembly requirements in more detail!

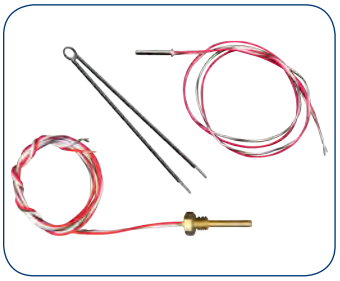
temperature controllers

AMS Technologies offers a range of high-precision, ultra-stable temperature controllers for thermoelectric cooler modules. A very common application is the temperature control of laser diodes. Our controllers provide best thermal stability and allow to adjust the laser temperature and thus change the laser output wavelength, laser drive current or modal stability. Our ultra-stable, high precision temperature controllers are available for a wide range of applications such as biomedical, imaging, spectroscopy, remote sensing, military, aerospace, communications, material processing, environmental and manufacturing control.

axial fans, blowers & impellers

Our wide range of products for forced air cooling include axial fans and blowers both for AC and DC operation. Sizes of the square, rectangular and round shaped fans primarily focus on a range from 80 mm to 280 mm, supplying 42 m^3/hr to 2,140 m^3/hr. They are all designed to achieve high air performance, low-noise operation and low power consumption. While axial fans provide large flow rates but just a small increase in pressure, the centrifugal or radial DC “blower” fans as well as EC impellers deliver more pressure but less flow rate – making a DC blower or EC impeller the solution of choice for higher pressure systems.

temperature sensors



Accurate and fast temperature sensors are essential for precision temperature control. Amongst the different types of temperature sensors, thermistors provide very high sensitivity, small size and appropriate speed. AMS Technologies’ extensive range of NTC thermistor temperature sensor probes with base resistance values from 5 kΩ to 231.5 kΩ include various types from ultraminiature bare bead, epoxy coated and pipe versions (poly-imide, brass, brass nickel, stainless steel – threaded and unthreaded) to flange mount and plate models. Sizes range from 0.5 mm to 6.5 cm with Teflon coated lead lengths from 5 cm to 45 cm.

Contact us

from technology components to turnkey solutions

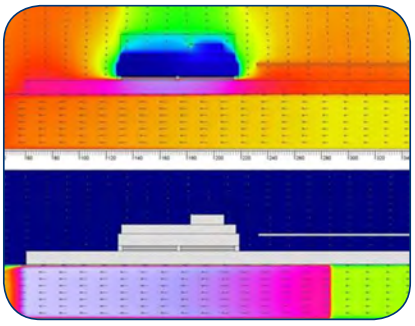
We want to accelerate your success, which is why AMS Technologies has invested in two design centers: in Krakow, Poland, and in the United Kingdom. Our goal is to augment your team's key competencies by providing engineering services that are not core to you or where you may struggle with available resources to finish your projects.

From design services to prototype development to complete turnkey solutions, our collaborative approach has already helped many customer projects to move from concept to production.

- Design, prototyping and "proof of concept"
- Development of turnkey solutions to the customer's order
- Design-in, systems integration, realization of entire design projects
- Development of customized specification sheets
- Effective project management of any product development
- Interdisciplinary system-level integrated design
- Appropriate subcontractor selection and production support
- Simulations and modeling of system-level designs
- Installation, training and servicing

case studies

laser diode module cooling

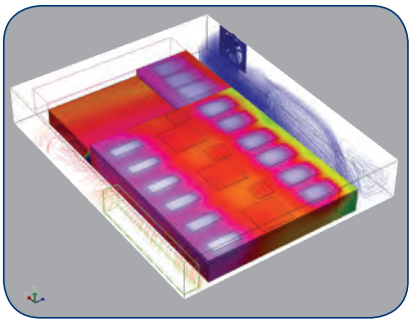


Safe operation at high ambient temperature required two peltier modules. Conventional high-performance heat sinks are not good in heat spreading and a high temperature difference creates a 300 W heat load on the hot side of a single peltier for a 60 W laser diode. The solution was to operate peltier modules in more efficient mode and distribute power on two modules.

thermo cupholder

Understanding the energy balance was key to the thermoelectric cooling unit design that won the Audi contest for best performance. Insulation properties, current draw, heat reflux, heat sink geometry and air channels had to be balanced to achieve the optimum results.

thermal simulation with CFD



Thermal simulation with computational fluid dynamics (CFD) allows the engineer to dimension his system in great detail. Especially in complex systems life expectancy of electronic components, space, mass and cost may be optimized. The analysis of temperatures and air flows helps to take the right measures such as adjusting air flow, positioning of power components, dimensioning of heat sinks and fans and others. AMS Technologies has done more than 230 studies for customers since the year 2000.

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