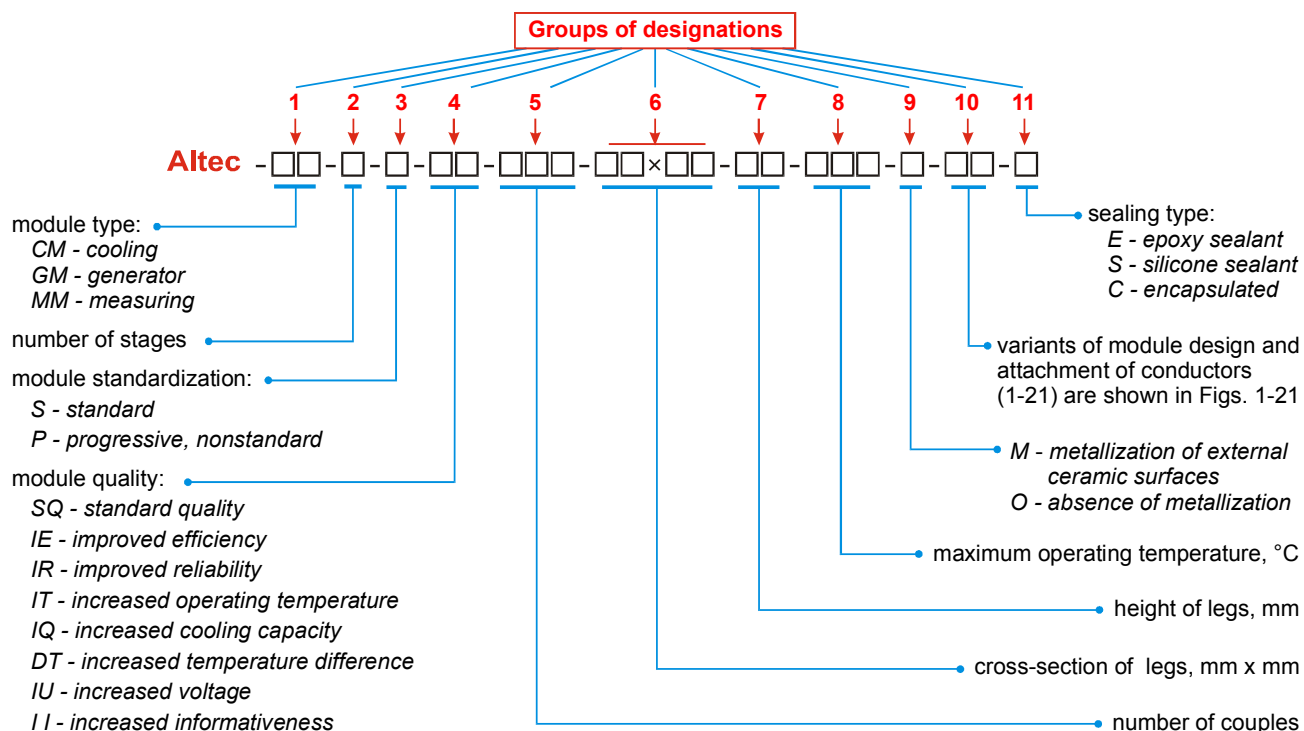




- 
- ALTEC company fabricates thermoelectric modules of three types: cooling, generator and modules for measuring technique.
  - The modules are based on the scientific and technological achievements of Institute of Thermoelectricity of National Academy of Sciences, Ukraine.
  - The modules were designed using the results of extensive tests conducted by Institute of Thermoelectricity of National Academy of Sciences, Ukraine, during recent 25 years.
  - These and other achievements of the Institute were marked by Honorary Golden Prize of International Thermoelectric Academy- the highest award in the field of thermoelectricity, as well as International Golden Award for Technology and Quality.
  - The modules utilize high-performance thermoelectric materials obtained by pressing, extrusion, zone recrystallization, Czochralski methods, as well as film thermoelectric materials.
  - The modules utilize high-quality ceramic metallized plates of aluminum oxide or nitride.
  - The modules utilize efficient multi-layer anti-diffusion barriers providing their high reliability and long service life.
  - The modules utilize efficient techniques for jointing the legs material to anti-diffusion barriers. Their adhesion strength exceeds the strength of the legs material.
  - Both standard modules and standard modules with various improvements are offered.
  - Offered are also the most suitable modules, namely such that provide the best parameters of products for each concrete application. These modules are fabricated on the basis of special flexible technology. The flexible technology includes the following components: adaptable techniques for manufacturing thermoelectric material depending on the operating temperature ranges of modules; adaptable cutting of legs of necessary size; adaptable techniques for creating anti-diffusion layers of necessary thickness within 10 - 200  $\mu\text{m}$ .
  - The modules utilize protective sealants and capsules that were successfully tested in the outer space, under increased humidity and other conditions.

## Designations of modules

• ALTEC company accepted the designations of modules characterizing their basic properties. The designations consist of letters and figures combined into 11 groups. The groups are separated by "-" sign.



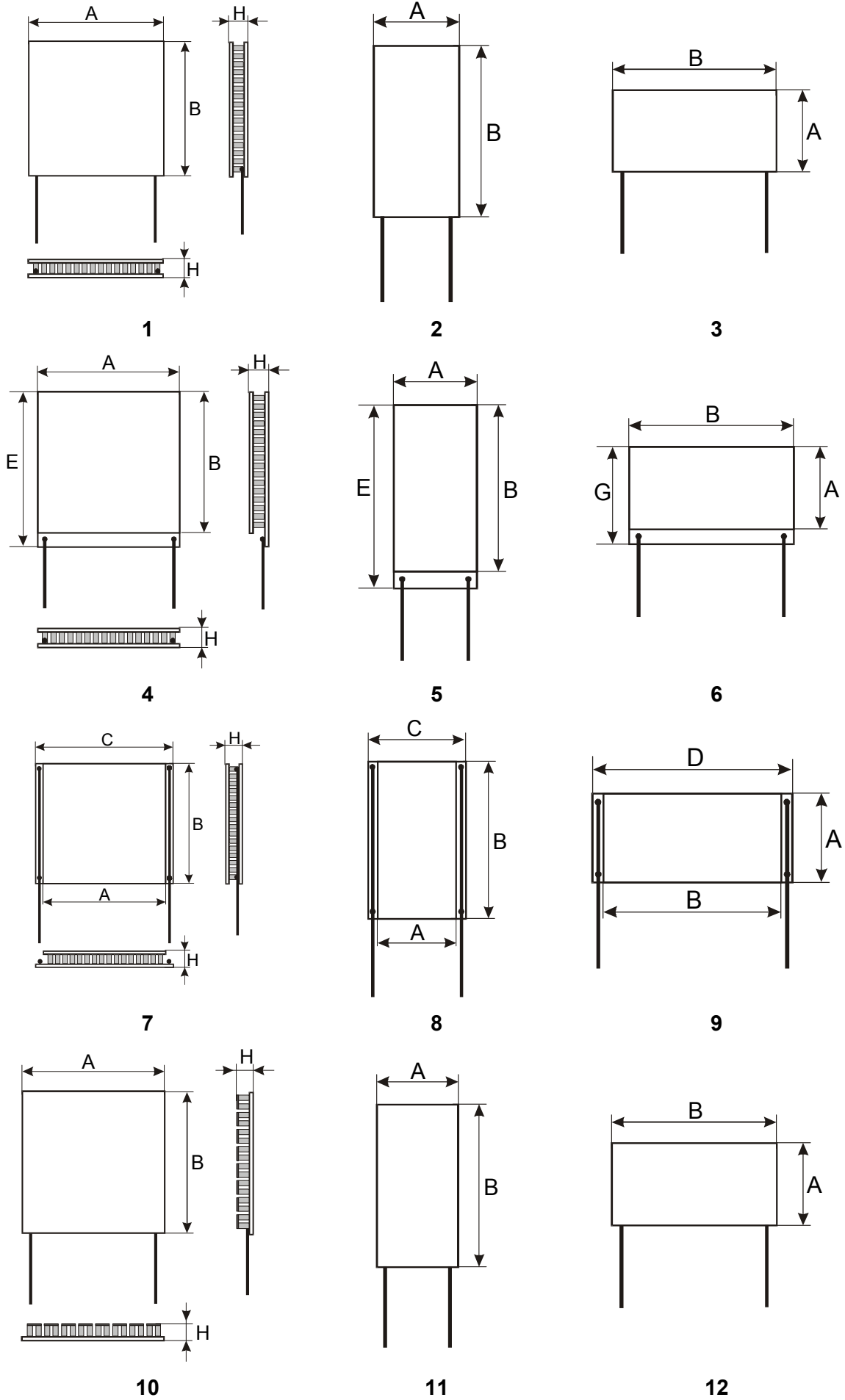
\* If a module has two or more properties, they are consecutively indicated in group 4. For example, the module of improved efficiency, reliability and increased cooling capacity in group 4 is designated IEIRIQ.

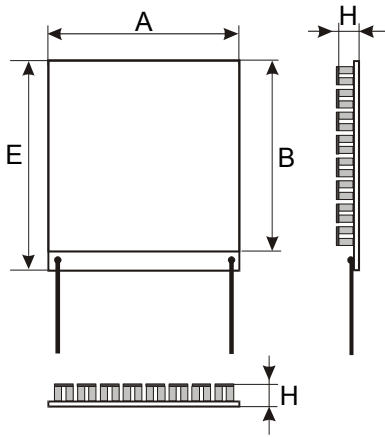
### **More detailed meaning of figures and letters in each group:**

- Group 1. Module type characterizing its purpose: CM - cooling, GM - generator, MM - for measuring technique.
- Group 2. Number of stages in module.
- Group 3. Module standardization: S - standard, general-purpose; P - nonstandard, special-purpose.
- Group 4. Quality of module: SQ - standard quality; IE - improved efficiency; IR - improved cyclic reliability; IT - increased operating temperature; IQ - increased cooling capacity; DT - increased maximum temperature difference; IU - increased operating voltage; II - increased informativeness.
- Group 5. Number of leg couples.
- Group 6. Cross-section of leg, mm x mm.
- Group 7. Leg height, mm.
- Group 8. The value of maximum operating temperature, °C.
- Group 9. Letter M is used for modules with metallized external ceramic surfaces, and letter O - for modules without metallization.
- Group 10. Design peculiarities of modules.
- Modules with two external ceramic plates and ordinary attachment of conductors are designated 1, 2, 3; their designs are shown in Figs.1, 2, 3.
  - Modules with two external ceramic plates and enforced attachment of conductors are designated 4, 5, 6, 7, 8, 9; their designs are shown in Figs.4, 5, 6, 7, 8, 9.
  - Modules with two external ceramic plates of square shape are designated 1, 4, 7.
  - Modules with one external ceramic plate and ordinary attachment of conductors are designated 10, 11, 12; their designs are shown in Figs.10, 11, 12.
  - Modules with one external ceramic plate and enforced attachment of conductors are designated 13, 14, 15, 16, 17, 18; their designs are shown in Figs.13, 14, 15, 16, 17, 18.
  - Modules with one external ceramic plate of square shape are designated 10, 13, 16.
  - Modules without external ceramic plates are designated 19; their design is shown in Fig.19.
  - Modules without external ceramic plates, without gaps between the legs (with interconnected legs) and having thermally conductive coatings for legs connections are designated 20. Their design is shown in Fig. 20.
- Group 11. Modules with silicone sealing are designated - S; with epoxy sealing - E; unsealed modules - O. Module with protective metal encapsulation is designated - C (Fig.21).

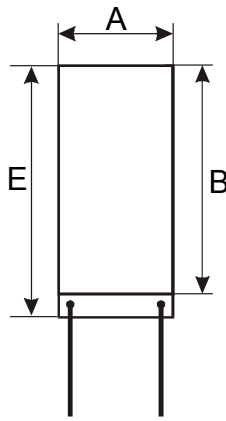
**Please, indicate the above designations of modules when placing your orders**

### Figures of module designs

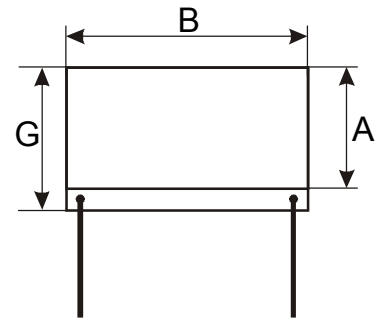




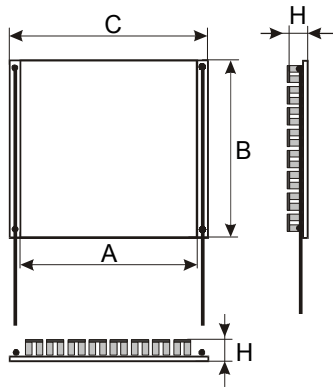
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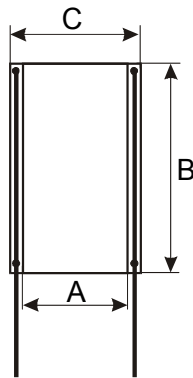
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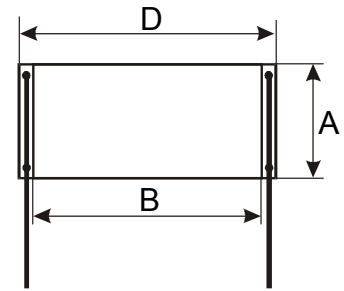
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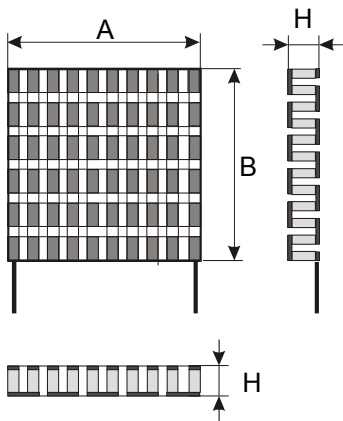
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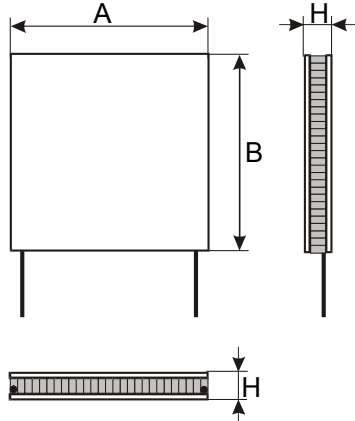
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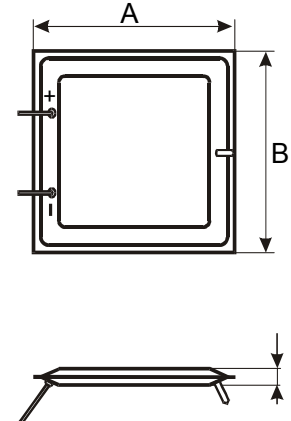
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19



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21

### Example

Module designation:

**Altec-CM-1-S-SQ-127-1.4x1.4-2.5-150-O-1-S**

Description of the designation: CM - cooling module, 1 - one stage, S - standard, SQ - standard quality, 127 - number of leg couples, 1,4x1,4 - cross-section of legs (mm), 2,5 - legs height (mm), 150 - maximum operating temperature (°C), O - without metallization of external ceramic surfaces, 1 - module design according to Fig.1, S - silicone sealing.

## Cooling modules

### Types and general parameters of single-stage thermoelectric modules ALTEC

Module type	Designation of module types*	$T_h, ^\circ\text{C}$	$DT_{\max}, ^\circ\text{C}$	$Q_{\max}, \text{Bt}$	$U_{\max}, \text{B}$	$I_{\max}, \text{A}$	$T_{\max}, ^\circ\text{C}$
Standard	Altec-CM-1-S-SQ	27	65 - 72	0.2 - 320	0,35 - 15.0	1.2 - 35.9	150, 200
Standard of improved efficiency	Altec-CM-1-S-IE	27	67 - 74	0.2 - 329	0.35 - 15.4	1.2 - 35.9	150, 200
Standard of improved cyclic reliability	Altec-CM-1-S-IR	27	65 - 72	0.2 - 310	0.35 - 15.0	1.2 - 35.9	150, 200
Standard of improved efficiency and reliability	Altec-CM-1-S-IEIR	27	67 - 74	0.2 - 319	0.35 - 15.4	1.2 - 35.9	150, 200
Standard of increased operating temperatures	Altec-CM-1-S-IT	27	65 - 71	0.2 - 315	0.35 - 15.0	1.2 - 35.9	200, 250
Standard of improved efficiency and increased operating temperatures	Altec-CM-1-S-IEIT	27	67 - 73	0.2 - 324	0.35 - 15.4	1.2 - 35.9	200, 250
Special-purpose of increased cooling capacity	Altec-CM-1-P-IQ	27	65 - 72	350 - 500	7.0 - 30.0	20.0 - 35.9	150, 200
Special-purpose of increased temperature difference	Altec-CM-1-P-DT	27	74 - 76	0.2 - 95	0.4 - 16.0	1.2 - 12.0	150, 200
Special-purpose particularly reliable	Altec-CM-1-P-IR	27	65 - 71	0.2 - 310	0.35 - 15.0	1.3 - 38.1	150, 200
Special-purpose of increased operating temperatures	Altec-CM-1-P-IT	27	63 - 68	1.0 - 200	0.35 - 15.0	4.5 - 36.0	300, 350
Special-purpose of improved efficiency and increased operating temperatures	Altec-CM-1-P-IEIT	27	65 - 70	1.0 - 210	0.35 - 15.4	4.5 - 36.0	300, 350
Special-purpose of increased operating voltages	Altec-CM-1-P-IU	27	68 - 72	44 - 200	30.0 - 220	0.005 - 5.7	150, 200
Special-purpose of improved efficiency and increased operating voltages	Altec-CM-1-P-IEIU	27	70 - 74	45 - 205	30.8 - 225	0.005 - 5.7	150, 200

## Standard single-stage modules Altec-CM-1-S-SQ

- Multi-purpose modules for creating household appliances, air-conditioners, medical and measuring equipment, metrological instruments, other goods and devices.
- The catalogue of basic 210 modules is listed in the table 1.
- Generally, the length of contact conductors in the modules is 150 mm, the length of non-insulated conductor is 10 mm. Alternative conductor lengths are available to customer's wish.
- The modules utilize ceramic plates made of  $Al_2O_3$ .
- Nickel metallization of external ceramic surfaces can be made.

**Table 1**

Module type	$T_h=27^{\circ}C$				Dimensions (mm)						
	$I_{max}$ (A)	$Q_{max}$ (W)	$U_{max}$ (V)	$DT_{max}$ (K)	A	B	C	D	E	G	H
Altec-CM-1-S-SQ-7-0.8x0.8-2.5	1,2	0.6	0.83	72	6	6	10	10	8	8	4.4
Altec-CM-1-S-SQ-17-0.8x0.8-2.5	1.2	1.5	2.00	72	9	9	13	13	11	11	4.4
Altec-CM-1-S-SQ-31-0.8x0.8-2.5	1.2	2.7	3.66	72	12	12	16	16	14	14	4.4
Altec-CM-1-S-SQ-63-0.8x0.8-2.5	1.2	5.4	7.44	72	12	24	16	28	26	14	4.4
Altec-CM-1-S-SQ-71-0.8x0.8-2.5	1.2	6.1	8.39	72	18	18	22	22	20	20	4.4
Altec-CM-1-S-SQ-127-0.8x0.8-2.5	1.2	11.0	15.00	72	24	24	28	28	26	26	4.4
Altec-CM-1-S-SQ-7-0.8x0.8-2.0	1.5	0.7	0.83	71	6	6	10	10	8	8	3.9
Altec-CM-1-S-SQ-17-0.8x0.8-2.0	1.5	1.8	2.00	71	9	9	13	13	11	11	3.9
Altec-CM-1-S-SQ-31-0.8x0.8-2.0	1.5	3.3	3.66	71	12	12	16	16	14	14	3.9
Altec-CM-1-S-SQ-63-0.8x0.8-2.0	1.5	6.7	7.44	71	12	24	16	28	26	14	3.9
Altec-CM-1-S-SQ-71-0.8x0.8-2.0	1.5	7.6	8.39	71	18	18	22	22	20	20	3.9
Altec-CM-1-S-SQ-127-0.8x0.8-2.0	1.5	13.5	15.00	71	24	24	28	28	26	26	3.9
Altec-CM-1-S-SQ-7-0.8x0.8-1.5	2.0	1.0	0.83	70	6	6	10	10	8	8	3.4
Altec-CM-1-S-SQ-17-0.8x0.8-1.5	2.0	2.4	2.00	70	9	9	13	13	11	11	3.4
Altec-CM-1-S-SQ-31-0.8x0.8-1.5	2.0	4.3	3.66	70	12	12	16	16	14	14	3.4
Altec-CM-1-S-SQ-63-0.8x0.8-1.5	2.0	8.8	7.44	70	12	24	16	28	26	14	3.4
Altec-CM-1-S-SQ-71-0.8x0.8-1.5	2.0	10.0	8.39	70	18	18	22	22	20	20	3.4
Altec-CM-1-S-SQ-127-0.8x0.8-1.5	2.0	17.8	15.00	70	24	24	28	28	26	26	3.4
Altec-CM-1-S-SQ-7-0.8x0.8-1.3	2.3	1.1	0.83	69	6	6	10	10	8	8	3.2
Altec-CM-1-S-SQ-17-0.8x0.8-1.3	2.3	2.7	2.00	69	9	9	13	13	11	11	3.2
Altec-CM-1-S-SQ-31-0.8x0.8-1.3	2.3	4.9	3.66	69	12	12	16	16	14	14	3.2
Altec-CM-1-S-SQ-63-0.8x0.8-1.3	2.3	10.0	7.44	69	12	24	16	28	26	14	3.2
Altec-CM-1-S-SQ-71-0.8x0.8-1.3	2.3	11.3	8.39	69	18	18	22	22	20	20	3.2
Altec-CM-1-S-SQ-127-0.8x0.8-1.3	2.3	20.2	15.00	69	24	24	28	28	26	26	3.2
Altec-CM-1-S-SQ-7-0.8x0.8-1.15	2.6	1.3	0.83	68	6	6	10	10	8	8	3.1
Altec-CM-1-S-SQ-17-0.8x0.8-1.15	2.6	3.0	2.00	68	9	9	13	13	11	11	3.1
Altec-CM-1-S-SQ-31-0.8x0.8-1.15	2.6	5.5	3.66	68	12	12	16	16	14	14	3.1
Altec-CM-1-S-SQ-63-0.8x0.8-1.15	2.6	11.2	7.44	68	12	24	16	28	26	14	3.1
Altec-CM-1-S-SQ-71-0.8x0.8-1.15	2.6	12.6	8.39	68	18	18	22	22	20	20	3.1

Altec-CM-1-S-SQ-127-0.8x0.8-1.15	2.6	22.5	15.00	68	24	24	28	28	26	26	3.1
Altec-CM-1-S-SQ-7-1.0x1.0-2.5	1.8	0.9	0.83	72	8	8	13	13	10.5	10.5	4.5
Altec-CM-1-S-SQ-17-1.0x1.0-2.5	1.8	2.2	2.00	72	12	12	17	17	14.5	14.5	4.5
Altec-CM-1-S-SQ-31-1.0x1.0-2.5	1.8	4.0	3.66	72	15	15	20	20	17.5	17.5	4.5
Altec-CM-1-S-SQ-63-1.0x1.0-2.5	1.8	8.2	7.44	72	15	30	20	35	32.5	17.5	4.5
Altec-CM-1-S-SQ-71-1.0x1.0-2.5	1.8	9.2	8.39	72	23	23	28	28	25.5	25.5	4.5
Altec-CM-1-S-SQ-127-1.0x1.0-2.5	1.8	16.5	15.00	72	30	30	35	35	32.5	32.5	4.5
Altec-CM-1-S-SQ-7-1.0x1.0-2.0	2.25	1.1	0.83	71	8	8	13	13	10.5	10.5	4.0
Altec-CM-1-S-SQ-17-1.0x1.0-2.0	2.25	2.7	2.00	71	12	12	17	17	14.5	14.5	4.0
Altec-CM-1-S-SQ-31-1.0x1.0-2.0	2.25	5.0	3.66	71	15	15	20	20	17.5	17.5	4.0
Altec-CM-1-S-SQ-63-1.0x1.0-2.0	2.25	10.1	7.44	71	15	30	20	35	32.5	17.5	4.0
Altec-CM-1-S-SQ-71-1.0x1.0-2.0	2.25	11.4	8.39	71	23	23	28	28	25.5	25.5	4.0
Altec-CM-1-S-SQ-127-1.0x1.0-2.0	2.25	20.4	15.00	71	30	30	35	35	32.5	32.5	4.0
Altec-CM-1-S-SQ-7-1.0x1.0-1.5	3.0	1.5	0.83	70	8	8	13	13	10.5	10.5	3.5
Altec-CM-1-S-SQ-17-1.0x1.0-1.5	3.0	3.6	2.00	70	12	12	17	17	14.5	14.5	3.5
Altec-CM-1-S-SQ-31-1.0x1.0-1.5	3.0	6.5	3.66	70	15	15	20	20	17.5	17.5	3.5
Altec-CM-1-S-SQ-63-1.0x1.0-1.5	3.0	13.3	7.44	70	15	30	20	35	32.5	17.5	3.5
Altec-CM-1-S-SQ-71-1.0x1.0-1.5	3.0	15.0	8.39	70	23	23	28	28	25.5	25.5	3.5
Altec-CM-1-S-SQ-127-1.0x1.0-1.5	3.0	26.8	15.00	70	30	30	35	35	32.5	32.5	3.5
Altec-CM-1-S-SQ-7-1.0x1.0-1.3	3.5	1.7	0.83	69	8	8	13	13	10.5	10.5	3.3
Altec-CM-1-S-SQ-17-1.0x1.0-1.3	3.5	4.1	2.00	69	12	12	17	17	14.5	14.5	3.3
Altec-CM-1-S-SQ-31-1.0x1.0-1.3	3.5	7.5	3.66	69	15	15	20	20	17.5	17.5	3.3
Altec-CM-1-S-SQ-63-1.0x1.0-1.3	3.5	15.3	7.44	69	15	30	20	35	32.5	17.5	3.3
Altec-CM-1-S-SQ-71-1.0x1.0-1.3	3.5	17.2	8.39	69	23	23	28	28	25.5	25.5	3.3
Altec-CM-1-S-SQ-127-1.0x1.0-1.3	3.5	30.8	15.00	69	30	30	35	35	32.5	32.5	3.3
Altec-CM-1-S-SQ-7-1.0x1.0-1.15	3.9	1.9	0.83	68	8	8	13	13	10.5	10.5	3.2
Altec-CM-1-S-SQ-17-1.0x1.0-1.15	3.9	4.5	2.00	68	12	12	17	17	14.5	14.5	3.2
Altec-CM-1-S-SQ-31-1.0x1.0-1.15	3.9	8.2	3.66	68	15	15	20	20	17.5	17.5	3.2
Altec-CM-1-S-SQ-63-1.0x1.0-1.15	3.9	16.8	7.44	68	15	30	20	35	32.5	17.5	3.2
Altec-CM-1-S-SQ-71-1.0x1.0-1.15	3.9	18.9	8.39	68	23	23	28	28	25.5	25.5	3.2
Altec-CM-1-S-SQ-127-1.0x1.0-1.15	3.9	33.8	15.00	68	30	30	35	35	32.5	32.5	3.2
Altec-CM-1-S-SQ-7-1.2x1.2-2.5	2.6	1.3	0.83	72	8	8	13	13	10.5	10.5	4.9
Altec-CM-1-S-SQ-17-1.2x1.2-2.5	2.6	3.2	2.00	72	12	12	17	17	14.5	14.5	4.9
Altec-CM-1-S-SQ-31-1.2x1.2-2.5	2.6	5.8	3.66	72	15	15	20	20	17.5	17.5	4.9
Altec-CM-1-S-SQ-63-1.2x1.2-2.5	2.6	11.8	7.44	72	15	30	20	35	32.5	17.5	4.9
Altec-CM-1-S-SQ-71-1.2x1.2-2.5	2.6	13.3	8.39	72	23	23	28	28	25.5	25.5	4.9
Altec-CM-1-S-SQ-127-1.2x1.2-2.5	2.6	23.8	15.00	72	30	30	35	35	32.5	32.5	4.9
Altec-CM-1-S-SQ-7-1.2x1.2-2.0	3.3	1.6	0.83	71	8	8	13	13	10.5	10.5	4.4
Altec-CM-1-S-SQ-17-1.2x1.2-2.0	3.3	4.0	2.00	71	12	12	17	17	14.5	14.5	4.4
Altec-CM-1-S-SQ-31-1.2x1.2-2.0	3.3	7.1	3.66	71	15	15	20	20	17.5	17.5	4.4
Altec-CM-1-S-SQ-63-1.2x1.2-2.0	3.3	14.8	7.44	71	15	30	20	35	32.5	17.5	4.4
Altec-CM-1-S-SQ-71-1.2x1.2-2.0	3.3	16.7	8.39	71	23	23	28	28	25.5	25.5	4.4
Altec-CM-1-S-SQ-127-1.2x1.2-2.0	3.3	29.8	15.00	71	30	30	35	35	32.5	32.5	4.4
Altec-CM-1-S-SQ-7-1.2x1.2-1.5	4.4	2.2	0.83	70	8	8	13	13	10.5	10.5	3.9
Altec-CM-1-S-SQ-17-1.2x1.2-1.5	4.4	5.2	2.00	70	12	12	17	17	14.5	14.5	3.9
Altec-CM-1-S-SQ-31-1.2x1.2-1.5	4.4	9.6	3.66	70	15	15	20	20	17.5	17.5	3.9
Altec-CM-1-S-SQ-63-1.2x1.2-1.5	4.4	19.4	7.44	70	15	30	20	35	32.5	17.5	3.9
Altec-CM-1-S-SQ-71-1.2x1.2-1.5	4.4	21.9	8.39	70	23	23	28	28	25.5	25.5	3.9

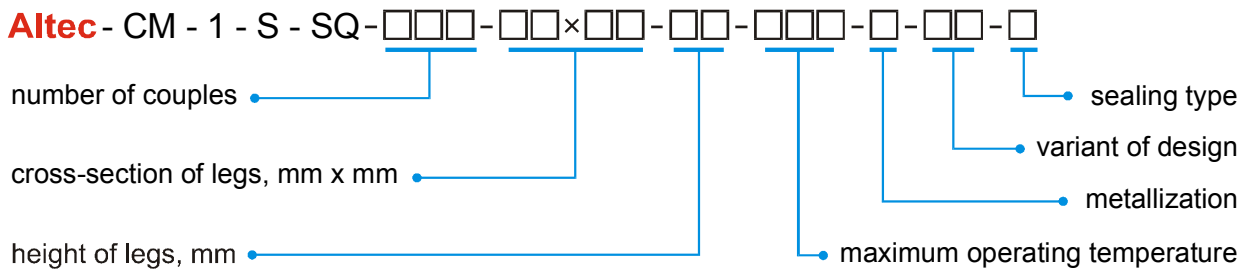


Altec-CM-1-S-SQ-127-1.2x1.2-1.5	4.4	39.2	15.00	70	30	30	35	35	32.5	32.5	3.9
Altec-CM-1-S-SQ-7-1.2x1.2-1.3	5.1	2.5	0.83	69	8	8	13	13	10.5	10.5	3.7
Altec-CM-1-S-SQ-17-1.2x1.2-1.3	5.1	6.0	2.00	69	12	12	17	17	14.5	14.5	3.7
Altec-CM-1-S-SQ-31-1.2x1.2-1.3	5.1	10.9	3.66	69	15	15	20	20	17.5	17.5	3.7
Altec-CM-1-S-SQ-63-1.2x1.2-1.3	5.1	22.2	7.44	69	15	30	20	35	32.5	17.5	3.7
Altec-CM-1-S-SQ-71-1.2x1.2-1.3	5.1	25.1	8.39	69	23	23	28	28	25.5	25.5	3.7
Altec-CM-1-S-SQ-127-1.2x1.2-1.3	5.1	44.8	15.00	69	30	30	35	35	32.5	32.5	3.7
Altec-CM-1-S-SQ-7-1.2x1.2-1.15	5.7	2.7	0.83	68	8	8	13	13	10.5	10.5	3.5
Altec-CM-1-S-SQ-17-1.2x1.2-1.15	5.7	6.6	2.00	68	12	12	17	17	14.5	14.5	3.5
Altec-CM-1-S-SQ-31-1.2x1.2-1.15	5.7	12.0	3.66	68	15	15	20	20	17.5	17.5	3.5
Altec-CM-1-S-SQ-63-1.2x1.2-1.15	5.7	24.5	7.44	68	15	30	20	35	32.5	17.5	3.5
Altec-CM-1-S-SQ-71-1.2x1.2-1.15	5.7	27.6	8.39	68	23	23	28	28	25.5	25.5	3.5
Altec-CM-1-S-SQ-127-1.2x1.2-1.15	5.7	49.3	15.00	68	30	30	35	35	32.5	32.5	3.5
Altec-CM-1-S-SQ-7-1.4x1.4-2.5	3.6	1.8	0.83	72	10	10	16	16	13	13	4.9
Altec-CM-1-S-SQ-17-1.4x1.4-2.5	3.6	4.4	2.00	72	15	15	21	21	18	18	4.9
Altec-CM-1-S-SQ-31-1.4x1.4-2.5	3.6	8.1	3.66	72	20	20	26	26	23	23	4.9
Altec-CM-1-S-SQ-63-1.4x1.4-2.5	3.6	16.4	7.44	72	20	40	26	46	43	23	4.9
Altec-CM-1-S-SQ-71-1.4x1.4-2.5	3.6	18.5	8.39	72	30	30	36	36	33	33	4.9
Altec-CM-1-S-SQ-127-1.4x1.4-2.5	3.6	33.0	15.00	72	40	40	46	46	43	43	4.9
Altec-CM-1-S-SQ-7-1.4x1.4-2.0	4.5	2.3	0.83	71	10	10	16	16	13	13	4.4
Altec-CM-1-S-SQ-17-1.4x1.4-2.0	4.5	5.4	2.00	71	15	15	21	21	18	18	4.4
Altec-CM-1-S-SQ-31-1.4x1.4-2.0	4.5	9.9	3.66	71	20	20	26	26	23	23	4.4
Altec-CM-1-S-SQ-63-1.4x1.4-2.0	4.5	20.2	7.44	71	20	40	26	46	43	23	4.4
Altec-CM-1-S-SQ-71-1.4x1.4-2.0	4.5	22.8	8.39	71	30	30	36	36	33	33	4.4
Altec-CM-1-S-SQ-127-1.4x1.4-2.0	4.5	40.7	15.00	71	40	40	46	46	43	43	4.4
Altec-CM-1-S-SQ-7-1.4x1.4-1.5	6.0	3.0	0.83	70	10	10	16	16	13	13	3.9
Altec-CM-1-S-SQ-17-1.4x1.4-1.5	6.0	7.1	2.00	70	15	15	21	21	18	18	3.9
Altec-CM-1-S-SQ-31-1.4x1.4-1.5	6.0	13.0	3.66	70	20	20	26	26	23	23	3.9
Altec-CM-1-S-SQ-63-1.4x1.4-1.5	6.0	26.5	7.44	70	20	40	26	46	43	23	3.9
Altec-CM-1-S-SQ-71-1.4x1.4-1.5	6.0	29.9	8.39	70	30	30	36	36	33	33	3.9
Altec-CM-1-S-SQ-127-1.4x1.4-1.5	6.0	53.5	15.00	70	40	40	46	46	43	43	3.9
Altec-CM-1-S-SQ-7-1.4x1.4-1.3	6.9	3.4	0.83	69	10	10	16	16	13	13	3.7
Altec-CM-1-S-SQ-17-1.4x1.4-1.3	6.9	8.1	2.00	69	15	15	21	21	18	18	3.7
Altec-CM-1-S-SQ-31-1.4x1.4-1.3	6.9	14.8	3.66	69	20	20	26	26	23	23	3.7
Altec-CM-1-S-SQ-63-1.4x1.4-1.3	6.9	30.0	7.44	69	20	40	26	46	43	23	3.7
Altec-CM-1-S-SQ-71-1.4x1.4-1.3	6.9	33.9	8.39	69	30	30	36	36	33	33	3.7
Altec-CM-1-S-SQ-127-1.4x1.4-1.3	6.9	60.6	15.00	69	40	40	46	46	43	43	3.7
Altec-CM-1-S-SQ-7-1.4x1.4-1.15	7.8	3.7	0.83	68	10	10	16	16	13	13	3.5
Altec-CM-1-S-SQ-17-1.4x1.4-1.15	7.8	9.0	2.00	68	15	15	21	21	18	18	3.5
Altec-CM-1-S-SQ-31-1.4x1.4-1.15	7.8	16.5	3.66	68	20	20	26	26	23	23	3.5
Altec-CM-1-S-SQ-63-1.4x1.4-1.15	7.8	33.5	7.44	68	20	40	26	46	43	23	3.5
Altec-CM-1-S-SQ-71-1.4x1.4-1.15	7.8	37.8	8.39	68	30	30	36	36	33	33	3.5
Altec-CM-1-S-SQ-127-1.4x1.4-1.15	7.8	67.6	15.00	68	40	40	46	46	43	43	3.5
Altec-CM-1-S-SQ-7-1.6x1.6-2.5	4.7	2.4	0.83	72	10	10	16	16	13	13	4.9
Altec-CM-1-S-SQ-17-1.6x1.6-2.5	4.7	5.7	2.00	72	15	15	21	21	18	18	4.9
Altec-CM-1-S-SQ-31-1.6x1.6-2.5	4.7	10.5	3.66	72	20	20	26	26	23	23	4.9
Altec-CM-1-S-SQ-63-1.6x1.6-2.5	4.7	21.4	7.44	72	20	40	26	46	43	23	4.9
Altec-CM-1-S-SQ-71-1.6x1.6-2.5	4.7	24.1	8.39	72	30	30	36	36	33	33	4.9

Altec-CM-1-S-SQ-127-1.6x1.6-2.5	4.7	43.1	15.00	72	40	40	46	46	43	43	4.9
Altec-CM-1-S-SQ-7-1.6x1.6-2.0	5.9	3.0	0.83	71	10	10	16	16	13	13	4.4
Altec-CM-1-S-SQ-17-1.6x1.6-2.0	5.9	7.1	2.00	71	15	15	21	21	18	18	4.4
Altec-CM-1-S-SQ-31-1.6x1.6-2.0	5.9	13.0	3.66	71	20	20	26	26	23	23	4.4
Altec-CM-1-S-SQ-63-1.6x1.6-2.0	5.9	26.5	7.44	71	20	40	26	46	43	23	4.4
Altec-CM-1-S-SQ-71-1.6x1.6-2.0	5.9	29.9	8.39	71	30	30	36	36	33	33	4.4
Altec-CM-1-S-SQ-127-1.6x1.6-2.0	5.9	53.4	15.00	71	40	40	46	46	43	43	4.4
Altec-CM-1-S-SQ-7-1.6x1.6-1.5	7.8	3.9	0.83	70	10	10	16	16	13	13	3.9
Altec-CM-1-S-SQ-17-1.6x1.6-1.5	7.8	9.3	2.00	70	15	15	21	21	18	18	3.9
Altec-CM-1-S-SQ-31-1.6x1.6-1.5	7.8	17.0	3.66	70	20	20	26	26	23	23	3.9
Altec-CM-1-S-SQ-63-1.6x1.6-1.5	7.8	34.5	7.44	70	20	40	26	46	43	23	3.9
Altec-CM-1-S-SQ-71-1.6x1.6-1.5	7.8	38.9	8.39	70	30	30	36	36	33	33	3.9
Altec-CM-1-S-SQ-127-1.6x1.6-1.5	7.8	69.6	15.00	70	40	40	46	46	43	43	3.9
Altec-CM-1-S-SQ-7-1.6x1.6-1.3	9.0	4.4	0.83	69	10	10	16	16	13	13	4.1
Altec-CM-1-S-SQ-17-1.6x1.6-1.3	9.0	10.6	2.00	69	15	15	21	21	18	18	4.1
Altec-CM-1-S-SQ-31-1.6x1.6-1.3	9.0	19.3	3.66	69	20	20	26	26	23	23	4.1
Altec-CM-1-S-SQ-63-1.6x1.6-1.3	9.0	39.2	7.44	69	20	40	26	46	43	23	4.1
Altec-CM-1-S-SQ-71-1.6x1.6-1.3	9.0	44.3	8.39	69	30	30	36	36	33	33	4.1
Altec-CM-1-S-SQ-127-1.6x1.6-1.3	9.0	79.2	15.00	69	40	40	46	46	43	43	4.1
Altec-CM-1-S-SQ-7-1.6x1.6-1.15	10.2	5.1	0.83	68	10	10	16	16	13	13	4.9
Altec-CM-1-S-SQ-17-1.6x1.6-1.15	10.2	12.1	2.00	68	15	15	21	21	18	18	4.9
Altec-CM-1-S-SQ-31-1.6x1.6-1.15	10.2	22.1	3.66	68	20	20	26	26	23	23	4.9
Altec-CM-1-S-SQ-63-1.6x1.6-1.15	10.2	45.1	7.44	68	20	40	26	46	43	23	4.9
Altec-CM-1-S-SQ-71-1.6x1.6-1.15	10.2	50.9	8.39	68	30	30	36	36	33	33	4.9
Altec-CM-1-S-SQ-127-1.6x1.6-1.15	10.2	91.1	15.00	68	40	40	46	46	43	43	4.9
Altec-CM-1-S-SQ-7-1.8x1.8-2.5	5.9	3.0	0.83	72	10	10	16	16	13	13	4.9
Altec-CM-1-S-SQ-17-1.8x1.8-2.5	5.9	7.2	2.00	72	15	15	21	21	18	18	4.9
Altec-CM-1-S-SQ-31-1.8x1.8-2.5	5.9	13.2	3.66	72	20	20	26	26	23	23	4.9
Altec-CM-1-S-SQ-63-1.8x1.8-2.5	5.9	26.8	7.44	72	20	40	26	46	43	23	4.9
Altec-CM-1-S-SQ-71-1.8x1.8-2.5	5.9	30.3	8.39	72	30	30	36	36	33	33	4.9
Altec-CM-1-S-SQ-127-1.8x1.8-2.5	5.9	54.1	15.00	72	40	40	46	46	43	43	4.9
Altec-CM-1-S-SQ-7-1.8x1.8-2.0	7.4	3.7	0.83	71	10	10	16	16	13	13	4.4
Altec-CM-1-S-SQ-17-1.8x1.8-2.0	7.4	8.9	2.00	71	15	15	21	21	18	18	4.4
Altec-CM-1-S-SQ-31-1.8x1.8-2.0	7.4	16.3	3.66	71	20	20	26	26	23	23	4.4
Altec-CM-1-S-SQ-63-1.8x1.8-2.0	7.4	33.1	7.44	71	20	40	26	46	43	23	4.4
Altec-CM-1-S-SQ-71-1.8x1.8-2.0	7.4	37.4	8.39	71	30	30	36	36	33	33	4.4
Altec-CM-1-S-SQ-127-1.8x1.8-2.0	7.4	66.9	15.00	71	40	40	46	46	43	43	4.4
Altec-CM-1-S-SQ-7-1.8x1.8-1.5	9.9	4.9	0.83	70	10	10	16	16	13	13	4.3
Altec-CM-1-S-SQ-17-1.8x1.8-1.5	9.9	11.8	2.00	70	15	15	21	21	18	18	4.3
Altec-CM-1-S-SQ-31-1.8x1.8-1.5	9.9	21.5	3.66	70	20	20	26	26	23	23	4.3
Altec-CM-1-S-SQ-63-1.8x1.8-1.5	9.9	43.7	7.44	70	20	40	26	46	43	23	4.3
Altec-CM-1-S-SQ-71-1.8x1.8-1.5	9.9	49.4	8.39	70	30	30	36	36	33	33	4.3
Altec-CM-1-S-SQ-127-1.8x1.8-1.5	9.9	88.3	15.00	70	40	40	46	46	43	43	4.3
Altec-CM-1-S-SQ-7-1.8x1.8-1.3	11.4	5.5	0.83	69	10	10	16	16	13	13	4.3
Altec-CM-1-S-SQ-17-1.8x1.8-1.3	11.4	13.4	2.00	69	15	15	21	21	18	18	4.3
Altec-CM-1-S-SQ-31-1.8x1.8-1.3	11.4	24.4	3.66	69	20	20	26	26	23	23	4.3
Altec-CM-1-S-SQ-63-1.8x1.8-1.3	11.4	49.6	7.44	69	20	40	26	46	43	23	4.3
Altec-CM-1-S-SQ-71-1.8x1.8-1.3	11.4	56.0	8.39	69	30	30	36	36	33	33	4.3

Altec-CM-1-S-SQ-127-1.8x1.8-1.3	11.4	100.2	15.00	69	40	40	46	46	43	43	4.3
Altec-CM-1-S-SQ-7-1.8x1.8-1.15	12.9	6.2	0.83	68	10	10	16	16	13	13	4.3
Altec-CM-1-S-SQ-17-1.8x1.8-1.15	12.9	14.9	2.00	68	15	15	21	21	18	18	4.3
Altec-CM-1-S-SQ-31-1.8x1.8-1.15	12.9	27.3	3.66	68	20	20	26	26	23	23	4.3
Altec-CM-1-S-SQ-63-1.8x1.8-1.15	12.9	55.4	7.44	68	20	40	26	46	43	23	4.3
Altec-CM-1-S-SQ-71-1.8x1.8-1.15	12.9	62.5	8.39	68	30	30	36	36	33	33	4.3
Altec-CM-1-S-SQ-127-1.8x1.8-1.15	12.9	111.8	15.00	68	40	40	46	46	43	43	4.3
Altec-CM-1-S-SQ-7-2.0x2.0-2.5	7.3	3.7	0.83	72	10	10	16	16	13	13	4.9
Altec-CM-1-S-SQ-17-2.0x2.0-2.5	7.3	8.9	2.00	72	15	15	21	21	18	18	4.9
Altec-CM-1-S-SQ-31-2.0x2.0-2.5	7.3	16.3	3.66	72	20	20	26	26	23	23	4.9
Altec-CM-1-S-SQ-63-2.0x2.0-2.5	7.3	33.2	7.44	72	20	40	26	46	43	23	4.9
Altec-CM-1-S-SQ-71-2.0x2.0-2.5	7.3	37.5	8.39	72	30	30	36	36	33	33	4.9
Altec-CM-1-S-SQ-127-2.0x2.0-2.5	7.3	67.0	15.00	72	40	40	46	46	43	43	4.9
Altec-CM-1-S-SQ-7-2.0x2.0-2.0	9.1	4.6	0.83	71	10	10	16	16	13	13	4.8
Altec-CM-1-S-SQ-17-2.0x2.0-2.0	9.1	11.0	2.00	71	15	15	21	21	18	18	4.8
Altec-CM-1-S-SQ-31-2.0x2.0-2.0	9.1	20.1	3.66	71	20	20	26	26	23	23	4.8
Altec-CM-1-S-SQ-63-2.0x2.0-2.0	9.1	40.8	7.44	71	20	40	26	46	43	23	4.8
Altec-CM-1-S-SQ-71-2.0x2.0-2.0	9.1	46.0	8.39	71	30	30	36	36	33	33	4.8
Altec-CM-1-S-SQ-127-2.0x2.0-2.0	9.1	82.3	15.00	71	40	40	46	46	43	43	4.8
Altec-CM-1-S-SQ-7-2.0x2.0-1.5	12.2	6.0	0.83	70	10	10	16	16	13	13	4.6
Altec-CM-1-S-SQ-17-2.0x2.0-1.5	12.2	14.5	2.00	70	15	15	21	21	18	18	4.6
Altec-CM-1-S-SQ-31-2.0x2.0-1.5	12.2	26.5	3.66	70	20	20	26	26	23	23	4.6
Altec-CM-1-S-SQ-63-2.0x2.0-1.5	12.2	53.9	7.44	70	20	40	26	46	43	23	4.6
Altec-CM-1-S-SQ-71-2.0x2.0-1.5	12.2	60.9	8.39	70	30	30	36	36	33	33	4.6
Altec-CM-1-S-SQ-127-2.0x2.0-1.5	12.2	108.8	15.00	70	40	40	46	46	43	43	4.6
Altec-CM-1-S-SQ-7-2.0x2.0-1.3	14.1	6.9	0.83	69	10	10	16	16	13	13	4.7
Altec-CM-1-S-SQ-17-2.0x2.0-1.3	14.1	16.5	2.00	69	15	15	21	21	18	18	4.7
Altec-CM-1-S-SQ-31-2.0x2.0-1.3	14.1	30.2	3.66	69	20	20	26	26	23	23	4.7
Altec-CM-1-S-SQ-63-2.0x2.0-1.3	14.1	61.4	7.44	69	20	40	26	46	43	23	4.7
Altec-CM-1-S-SQ-71-2.0x2.0-1.3	14.1	69.3	8.39	69	30	30	36	36	33	33	4.7
Altec-CM-1-S-SQ-127-2.0x2.0-1.3	14.1	123.9	15.00	69	40	40	46	46	43	43	4.7
Altec-CM-1-S-SQ-7-2.0x2.0-1.15	15.9	8.1	0.83	68	10	10	16	16	13	13	4.7
Altec-CM-1-S-SQ-17-2.0x2.0-1.15	15.9	19.4	2.00	68	15	15	21	21	18	18	4.7
Altec-CM-1-S-SQ-31-2.0x2.0-1.15	15.9	35.6	3.66	68	20	20	26	26	23	23	4.7
Altec-CM-1-S-SQ-63-2.0x2.0-1.15	15.9	72.2	7.44	68	20	40	26	46	43	23	4.7
Altec-CM-1-S-SQ-71-2.0x2.0-1.15	15.9	81.6	8.39	68	30	30	36	36	33	33	4.7
Altec-CM-1-S-SQ-127-2.0x2.0-1.15	15.9	145.8	15.00	68	40	40	46	46	43	43	4.7

- To place the order for purchasing module or get additional information, you should write full designation of the module you selected. To do this, you should fill in all the groups of the module designation:



- the number of leg couples, the cross-section of legs, the height of legs are determined from the catalogue of basic 210 modules or the catalogue of complete series of 2100 modules;
- maximum operating temperature is selected from 150 or 200 °C;
- metallization is selected from positions - M or O (M - metallized external ceramic surfaces, O - absence of metallization);
- variant of module design and attachment of conductors are selected from Figs.1-9 of section "Designations of modules";
- sealing type is selected from four positions - E, S, C, O (E - epoxy sealant, S - silicone sealant, C - encapsulated case, O - unsealed).

- The data on the reliability of modules, prices, other information is given to your request.

## Standard single-stage modules of improved efficiency Altec-CM-1-S-IE

- Multi-purpose modules for creating household appliances, air-conditioners, medical instruments with improved characteristics.
- The modules utilize high-performance thermoelectric materials with increased value of thermoelectric figure of merit.
- The modules have increased temperature difference  $\Delta T_{\max}$  and cooling capacity  $Q_{\max}$
- The catalogue of basic 210 modules is listed in the table 2.
- Generally, the length of contact conductors in the modules is 150 mm, the length of non-insulated conductor is 10 mm. Alternative conductor lengths are available to customer's wish.
- The modules utilize ceramic plates made of  $Al_2O_3$ .
- Nickel metallization of external ceramic surfaces can be made.

**Table 2**

Module type	$T_h=27^{\circ}C$				Dimensions (mm)						
	$I_{\max}$ (A)	$Q_{\max}$ (W)	$U_{\max}$ (V)	$DT_{\max}$ (K)	A	B	C	D	E	G	H
Altec-CM-1-S-IE-7-0.8x0.8-2.5	1.2	0.6	0.85	74	6	6	10	10	8	8	4.4
Altec-CM-1-S-IE-17-0.8x0.8-2.5	1.2	1.5	2.05	74	9	9	13	13	11	11	4.4
Altec-CM-1-S-IE-31-0.8x0.8-2.5	1.2	2.8	3.76	74	12	12	16	16	14	14	4.4
Altec-CM-1-S-IE-63-0.8x0.8-2.5	1.2	5.6	7.64	74	12	24	16	28	26	14	4.4
Altec-CM-1-S-IE-71-0.8x0.8-2.5	1.2	6.3	8.61	74	18	18	22	22	20	20	4.4
Altec-CM-1-S-IE-127-0.8x0.8-2.5	1.2	11.3	15.40	74	24	24	28	28	26	26	4.4
Altec-CM-1-S-IE-7-0.8x0.8-2.0	1.5	0.7	0.85	73	6	6	10	10	8	8	3.9
Altec-CM-1-S-IE-17-0.8x0.8-2.0	1.5	1.9	2.05	73	9	9	13	13	11	11	3.9
Altec-CM-1-S-IE-31-0.8x0.8-2.0	1.5	3.4	3.76	73	12	12	16	16	14	14	3.9
Altec-CM-1-S-IE-63-0.8x0.8-2.0	1.5	6.9	7.64	73	12	24	16	28	26	14	3.9
Altec-CM-1-S-IE-71-0.8x0.8-2.0	1.5	7.8	8.61	73	18	18	22	22	20	20	3.9
Altec-CM-1-S-IE-127-0.8x0.8-2.0	1.5	13.9	15.40	73	24	24	28	28	26	26	3.9
Altec-CM-1-S-IE-7-0.8x0.8-1.5	2.0	1.0	0.85	72	6	6	10	10	8	8	3.4
Altec-CM-1-S-IE-17-0.8x0.8-1.5	2.0	2.5	2.05	72	9	9	13	13	11	11	3.4
Altec-CM-1-S-IE-31-0.8x0.8-1.5	2.0	4.4	3.76	72	12	12	16	16	14	14	3.4
Altec-CM-1-S-IE-63-0.8x0.8-1.5	2.0	9.1	7.64	72	12	24	16	28	26	14	3.4
Altec-CM-1-S-IE-71-0.8x0.8-1.5	2.0	10.3	8.61	72	18	18	22	22	20	20	3.4
Altec-CM-1-S-IE-127-0.8x0.8-1.5	2.0	18.3	15.40	72	24	24	28	28	26	26	3.4
Altec-CM-1-S-IE-7-0.8x0.8-1.3	2.3	1.1	0.85	71	6	6	10	10	8	8	3.2
Altec-CM-1-S-IE-17-0.8x0.8-1.3	2.3	2.8	2.05	71	9	9	13	13	11	11	3.2
Altec-CM-1-S-IE-31-0.8x0.8-1.3	2.3	5.0	3.76	71	12	12	16	16	14	14	3.2
Altec-CM-1-S-IE-63-0.8x0.8-1.3	2.3	10.3	7.64	71	12	24	16	28	26	14	3.2
Altec-CM-1-S-IE-71-0.8x0.8-1.3	2.3	11.6	8.61	71	18	18	22	22	20	20	3.2

Altec-CM-1-S-IE-127-0.8x0.8-1.3	2.3	20.8	15.40	71	24	24	28	28	26	26	3.2
Altec-CM-1-S-IE-7-0.8x0.8-1.15	2.6	1.3	0.85	70	6	6	10	10	8	8	3.1
Altec-CM-1-S-IE-17-0.8x0.8-1.15	2.6	3.1	2.05	70	9	9	13	13	11	11	3.1
Altec-CM-1-S-IE-31-0.8x0.8-1.15	2.6	5.7	3.76	70	12	12	16	16	14	14	3.1
Altec-CM-1-S-IE-63-0.8x0.8-1.15	2.6	11.5	7.64	70	12	24	16	28	26	14	3.1
Altec-CM-1-S-IE-71-0.8x0.8-1.15	2.6	13.0	8.61	70	18	18	22	22	20	20	3.1
Altec-CM-1-S-IE-127-0.8x0.8-1.15	2.6	23.2	15.40	70	24	24	28	28	26	26	3.1
Altec-CM-1-S-IE-7-1.0x1.0-2.5	1.8	0.9	0.85	74	8	8	13	13	10.5	10.5	4.5
Altec-CM-1-S-IE-17-1.0x1.0-2.5	1.8	2.3	2.05	74	12	12	17	17	14.5	14.5	4.5
Altec-CM-1-S-IE-31-1.0x1.0-2.5	1.8	4.1	3.76	74	15	15	20	20	17.5	17.5	4.5
Altec-CM-1-S-IE-63-1.0x1.0-2.5	1.8	8.4	7.64	74	15	30	20	35	32.5	17.5	4.5
Altec-CM-1-S-IE-71-1.0x1.0-2.5	1.8	9.5	8.61	74	23	23	28	28	25.5	25.5	4.5
Altec-CM-1-S-IE-127-1.0x1.0-2.5	1.8	17.0	15.40	74	30	30	35	35	32.5	32.5	4.5
Altec-CM-1-S-IE-7-1.0x1.0-2.0	2.25	1.1	0.85	73	8	8	13	13	10.5	10.5	4.0
Altec-CM-1-S-IE-17-1.0x1.0-2.0	2.25	2.8	2.05	73	12	12	17	17	14.5	14.5	4.0
Altec-CM-1-S-IE-31-1.0x1.0-2.0	2.25	5.1	3.76	73	15	15	20	20	17.5	17.5	4.0
Altec-CM-1-S-IE-63-1.0x1.0-2.0	2.25	10.4	7.64	73	15	30	20	35	32.5	17.5	4.0
Altec-CM-1-S-IE-71-1.0x1.0-2.0	2.25	11.7	8.61	73	23	23	28	28	25.5	25.5	4.0
Altec-CM-1-S-IE-127-1.0x1.0-2.0	2.25	21.0	15.40	73	30	30	35	35	32.5	32.5	4.0
Altec-CM-1-S-IE-7-1.0x1.0-1.5	3.0	1.5	0.85	72	8	8	13	13	10.5	10.5	3.5
Altec-CM-1-S-IE-17-1.0x1.0-1.5	3.0	3.7	2.05	72	12	12	17	17	14.5	14.5	3.5
Altec-CM-1-S-IE-31-1.0x1.0-1.5	3.0	6.7	3.76	72	15	15	20	20	17.5	17.5	3.5
Altec-CM-1-S-IE-63-1.0x1.0-1.5	3.0	13.7	7.64	72	15	30	20	35	32.5	17.5	3.5
Altec-CM-1-S-IE-71-1.0x1.0-1.5	3.0	15.4	8.61	72	23	23	28	28	25.5	25.5	3.5
Altec-CM-1-S-IE-127-1.0x1.0-1.5	3.0	27.6	15.40	72	30	30	35	35	32.5	32.5	3.5
Altec-CM-1-S-IE-7-1.0x1.0-1.3	3.5	1.7	0.85	71	8	8	13	13	10.5	10.5	3.3
Altec-CM-1-S-IE-17-1.0x1.0-1.3	3.5	4.2	2.05	71	12	12	17	17	14.5	14.5	3.3
Altec-CM-1-S-IE-31-1.0x1.0-1.3	3.5	7.7	3.76	71	15	15	20	20	17.5	17.5	3.3
Altec-CM-1-S-IE-63-1.0x1.0-1.3	3.5	15.7	7.64	71	15	30	20	35	32.5	17.5	3.3
Altec-CM-1-S-IE-71-1.0x1.0-1.3	3.5	17.7	8.61	71	23	23	28	28	25.5	25.5	3.3
Altec-CM-1-S-IE-127-1.0x1.0-1.3	3.5	31.7	15.40	71	30	30	35	35	32.5	32.5	3.3
Altec-CM-1-S-IE-7-1.0x1.0-1.15	3.9	2.0	0.85	70	8	8	13	13	10.5	10.5	3.2
Altec-CM-1-S-IE-17-1.0x1.0-1.15	3.9	4.6	2.05	70	12	12	17	17	14.5	14.5	3.2
Altec-CM-1-S-IE-31-1.0x1.0-1.15	3.9	8.4	3.76	70	15	15	20	20	17.5	17.5	3.2
Altec-CM-1-S-IE-63-1.0x1.0-1.15	3.9	17.3	7.64	70	15	30	20	35	32.5	17.5	3.2
Altec-CM-1-S-IE-71-1.0x1.0-1.15	3.9	19.4	8.61	70	23	23	28	28	25.5	25.5	3.2
Altec-CM-1-S-IE-127-1.0x1.0-1.15	3.9	34.8	15.40	70	30	30	35	35	32.5	32.5	3.2
Altec-CM-1-S-IE-7-1.2x1.2-2.5	2.6	1.3	0.85	74	8	8	13	13	10.5	10.5	4.9
Altec-CM-1-S-IE-17-1.2x1.2-2.5	2.6	3.3	2.05	74	12	12	17	17	14.5	14.5	4.9
Altec-CM-1-S-IE-31-1.2x1.2-2.5	2.6	6.0	3.76	74	15	15	20	20	17.5	17.5	4.9
Altec-CM-1-S-IE-63-1.2x1.2-2.5	2.6	12.1	7.64	74	15	30	20	35	32.5	17.5	4.9
Altec-CM-1-S-IE-71-1.2x1.2-2.5	2.6	13.7	8.61	74	23	23	28	28	25.5	25.5	4.9
Altec-CM-1-S-IE-127-1.2x1.2-2.5	2.6	24.5	15.40	74	30	30	35	35	32.5	32.5	4.9
Altec-CM-1-S-IE-7-1.2x1.2-2.0	3.3	1.6	0.85	73	8	8	13	13	10.5	10.5	4.4
Altec-CM-1-S-IE-17-1.2x1.2-2.0	3.3	4.1	2.05	73	12	12	17	17	14.5	14.5	4.4
Altec-CM-1-S-IE-31-1.2x1.2-2.0	3.3	7.3	3.76	73	15	15	20	20	17.5	17.5	4.4
Altec-CM-1-S-IE-63-1.2x1.2-2.0	3.3	15.2	7.64	73	15	30	20	35	32.5	17.5	4.4
Altec-CM-1-S-IE-71-1.2x1.2-2.0	3.3	17.2	8.61	73	23	23	28	28	25.5	25.5	4.4

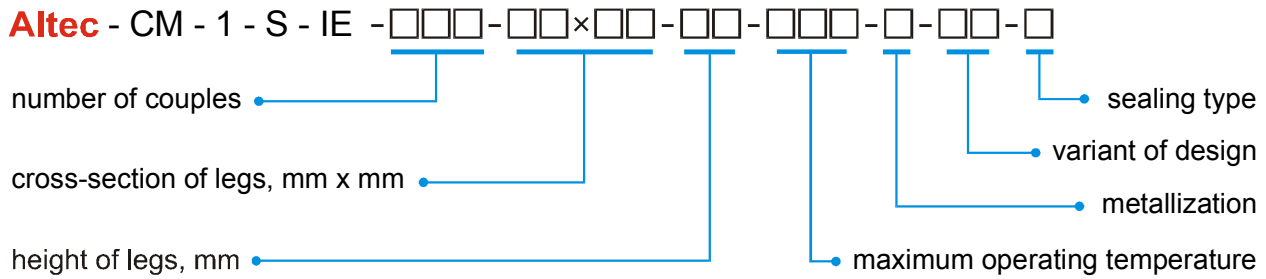
Altec-CM-1-S-IE-127-1.2x1.2-2.0	3.3	30.7	15.40	73	30	30	35	35	32.5	32.5	4.4
Altec-CM-1-S-IE-7-1.2x1.2-1.5	4.4	2.3	0.85	72	8	8	13	13	10.5	10.5	3.9
Altec-CM-1-S-IE-17-1.2x1.2-1.5	4.4	5.4	2.05	72	12	12	17	17	14.5	14.5	3.9
Altec-CM-1-S-IE-31-1.2x1.2-1.5	4.4	9.9	3.76	72	15	15	20	20	17.5	17.5	3.9
Altec-CM-1-S-IE-63-1.2x1.2-1.5	4.4	20.0	7.64	72	15	30	20	35	32.5	17.5	3.9
Altec-CM-1-S-IE-71-1.2x1.2-1.5	4.4	22.5	8.61	72	23	23	28	28	25.5	25.5	3.9
Altec-CM-1-S-IE-127-1.2x1.2-1.5	4.4	40.3	15.40	72	30	30	35	35	32.5	32.5	3.9
Altec-CM-1-S-IE-7-1.2x1.2-1.3	5.1	2.6	0.85	71	8	8	13	13	10.5	10.5	3.7
Altec-CM-1-S-IE-17-1.2x1.2-1.3	5.1	6.2	2.05	71	12	12	17	17	14.5	14.5	3.7
Altec-CM-1-S-IE-31-1.2x1.2-1.3	5.1	11.2	3.76	71	15	15	20	20	17.5	17.5	3.7
Altec-CM-1-S-IE-63-1.2x1.2-1.3	5.1	22.8	7.64	71	15	30	20	35	32.5	17.5	3.7
Altec-CM-1-S-IE-71-1.2x1.2-1.3	5.1	25.8	8.61	71	23	23	28	28	25.5	25.5	3.7
Altec-CM-1-S-IE-127-1.2x1.2-1.3	5.1	46.1	15.40	71	30	30	35	35	32.5	32.5	3.7
Altec-CM-1-S-IE-7-1.2x1.2-1.15	5.7	2.8	0.85	70	8	8	13	13	10.5	10.5	3.5
Altec-CM-1-S-IE-17-1.2x1.2-1.15	5.7	6.8	2.05	70	12	12	17	17	14.5	14.5	3.5
Altec-CM-1-S-IE-31-1.2x1.2-1.15	5.7	12.3	3.76	70	15	15	20	20	17.5	17.5	3.5
Altec-CM-1-S-IE-63-1.2x1.2-1.15	5.7	25.2	7.64	70	15	30	20	35	32.5	17.5	3.5
Altec-CM-1-S-IE-71-1.2x1.2-1.15	5.7	28.4	8.61	70	23	23	28	28	25.5	25.5	3.5
Altec-CM-1-S-IE-127-1.2x1.2-1.15	5.7	50.7	15.40	70	30	30	35	35	32.5	32.5	3.5
Altec-CM-1-S-IE-7-1.4x1.4-2.5	3.6	1.9	0.85	74	10	10	16	16	13	13	4.9
Altec-CM-1-S-IE-17-1.4x1.4-2.5	3.6	4.5	2.05	74	15	15	21	21	18	18	4.9
Altec-CM-1-S-IE-31-1.4x1.4-2.5	3.6	8.3	3.76	74	20	20	26	26	23	23	4.9
Altec-CM-1-S-IE-63-1.4x1.4-2.5	3.6	16.9	7.64	74	20	40	26	46	43	23	4.9
Altec-CM-1-S-IE-71-1.4x1.4-2.5	3.6	19.0	8.61	74	30	30	36	36	33	33	4.9
Altec-CM-1-S-IE-127-1.4x1.4-2.5	3.6	34.0	15.40	74	40	40	46	46	43	43	4.9
Altec-CM-1-S-IE-7-1.4x1.4-2.0	4.5	2.4	0.85	73	10	10	16	16	13	13	4.4
Altec-CM-1-S-IE-17-1.4x1.4-2.0	4.5	5.6	2.05	73	15	15	21	21	18	18	4.4
Altec-CM-1-S-IE-31-1.4x1.4-2.0	4.5	10.2	3.76	73	20	20	26	26	23	23	4.4
Altec-CM-1-S-IE-63-1.4x1.4-2.0	4.5	20.8	7.64	73	20	40	26	46	43	23	4.4
Altec-CM-1-S-IE-71-1.4x1.4-2.0	4.5	23.5	8.61	73	30	30	36	36	33	33	4.4
Altec-CM-1-S-IE-127-1.4x1.4-2.0	4.5	41.9	15.40	73	40	40	46	46	43	43	4.4
Altec-CM-1-S-IE-7-1.4x1.4-1.5	6.0	3.1	0.85	72	10	10	16	16	13	13	3.9
Altec-CM-1-S-IE-17-1.4x1.4-1.5	6.0	7.3	2.05	72	15	15	21	21	18	18	3.9
Altec-CM-1-S-IE-31-1.4x1.4-1.5	6.0	13.4	3.76	72	20	20	26	26	23	23	3.9
Altec-CM-1-S-IE-63-1.4x1.4-1.5	6.0	27.3	7.64	72	20	40	26	46	43	23	3.9
Altec-CM-1-S-IE-71-1.4x1.4-1.5	6.0	30.8	8.61	72	30	30	36	36	33	33	3.9
Altec-CM-1-S-IE-127-1.4x1.4-1.5	6.0	55.1	15.40	72	40	40	46	46	43	43	3.9
Altec-CM-1-S-IE-7-1.4x1.4-1.3	6.9	3.5	0.85	71	10	10	16	16	13	13	3.7
Altec-CM-1-S-IE-17-1.4x1.4-1.3	6.9	8.3	2.05	71	15	15	21	21	18	18	3.7
Altec-CM-1-S-IE-31-1.4x1.4-1.3	6.9	15.2	3.76	71	20	20	26	26	23	23	3.7
Altec-CM-1-S-IE-63-1.4x1.4-1.3	6.9	30.9	7.64	71	20	40	26	46	43	23	3.7
Altec-CM-1-S-IE-71-1.4x1.4-1.3	6.9	34.9	8.61	71	30	30	36	36	33	33	3.7
Altec-CM-1-S-IE-127-1.4x1.4-1.3	6.9	62.4	15.40	71	40	40	46	46	43	43	3.7
Altec-CM-1-S-IE-7-1.4x1.4-1.15	7.8	3.8	0.85	70	10	10	16	16	13	13	3.5
Altec-CM-1-S-IE-17-1.4x1.4-1.15	7.8	9.3	2.05	70	15	15	21	21	18	18	3.5
Altec-CM-1-S-IE-31-1.4x1.4-1.15	7.8	17.0	3.76	70	20	20	26	26	23	23	3.5
Altec-CM-1-S-IE-63-1.4x1.4-1.15	7.8	34.5	7.64	70	20	40	26	46	43	23	3.5
Altec-CM-1-S-IE-71-1.4x1.4-1.15	7.8	38.9	8.61	70	30	30	36	36	33	33	3.5

Altec-CM-1-S-IE-127-1.4x1.4-1.15	7.8	69.6	15.40	70	40	40	46	46	43	43	3.5
Altec-CM-1-S-IE-7-1.6x1.6-2.5	4.7	2.5	0.85	74	10	10	16	16	13	13	4.9
Altec-CM-1-S-IE-17-1.6x1.6-2.5	4.7	5.9	2.05	74	15	15	21	21	18	18	4.9
Altec-CM-1-S-IE-31-1.6x1.6-2.5	4.7	10.8	3.76	74	20	20	26	26	23	23	4.9
Altec-CM-1-S-IE-63-1.6x1.6-2.5	4.7	22.0	7.64	74	20	40	26	46	43	23	4.9
Altec-CM-1-S-IE-71-1.6x1.6-2.5	4.7	24.8	8.61	74	30	30	36	36	33	33	4.9
Altec-CM-1-S-IE-127-1.6x1.6-2.5	4.7	44.3	15.40	74	40	40	46	46	43	43	4.9
Altec-CM-1-S-IE-7-1.6x1.6-2.0	5.9	3.1	0.85	73	10	10	16	16	13	13	4.4
Altec-CM-1-S-IE-17-1.6x1.6-2.0	5.9	7.3	2.05	73	15	15	21	21	18	18	4.4
Altec-CM-1-S-IE-31-1.6x1.6-2.0	5.9	13.4	3.76	73	20	20	26	26	23	23	4.4
Altec-CM-1-S-IE-63-1.6x1.6-2.0	5.9	27.3	7.64	73	20	40	26	46	43	23	4.4
Altec-CM-1-S-IE-71-1.6x1.6-2.0	5.9	30.8	8.61	73	30	30	36	36	33	33	4.4
Altec-CM-1-S-IE-127-1.6x1.6-2.0	5.9	54.9	15.40	73	40	40	46	46	43	43	4.4
Altec-CM-1-S-IE-7-1.6x1.6-1.5	7.8	4.0	0.85	72	10	10	16	16	13	13	3.9
Altec-CM-1-S-IE-17-1.6x1.6-1.5	7.8	9.6	2.05	72	15	15	21	21	18	18	3.9
Altec-CM-1-S-IE-31-1.6x1.6-1.5	7.8	17.5	3.76	72	20	20	26	26	23	23	3.9
Altec-CM-1-S-IE-63-1.6x1.6-1.5	7.8	35.5	7.64	72	20	40	26	46	43	23	3.9
Altec-CM-1-S-IE-71-1.6x1.6-1.5	7.8	40.0	8.61	72	30	30	36	36	33	33	3.9
Altec-CM-1-S-IE-127-1.6x1.6-1.5	7.8	71.6	15.40	72	40	40	46	46	43	43	3.9
Altec-CM-1-S-IE-7-1.6x1.6-1.3	9.0	4.5	0.85	71	10	10	16	16	13	13	4.1
Altec-CM-1-S-IE-17-1.6x1.6-1.3	9.0	10.9	2.05	71	15	15	21	21	18	18	4.1
Altec-CM-1-S-IE-31-1.6x1.6-1.3	9.0	19.9	3.76	71	20	20	26	26	23	23	4.1
Altec-CM-1-S-IE-63-1.6x1.6-1.3	9.0	40.3	7.64	71	20	40	26	46	43	23	4.1
Altec-CM-1-S-IE-71-1.6x1.6-1.3	9.0	45.6	8.61	71	30	30	36	36	33	33	4.1
Altec-CM-1-S-IE-127-1.6x1.6-1.3	9.0	81.5	15.40	71	40	40	46	46	43	43	4.1
Altec-CM-1-S-IE-7-1.6x1.6-1.15	10.2	5.2	0.85	70	10	10	16	16	13	13	4.9
Altec-CM-1-S-IE-17-1.6x1.6-1.15	10.2	12.5	2.05	70	15	15	21	21	18	18	4.9
Altec-CM-1-S-IE-31-1.6x1.6-1.15	10.2	22.7	3.76	70	20	20	26	26	23	23	4.9
Altec-CM-1-S-IE-63-1.6x1.6-1.15	10.2	46.4	7.64	70	20	40	26	46	43	23	4.9
Altec-CM-1-S-IE-71-1.6x1.6-1.15	10.2	52.4	8.61	70	30	30	36	36	33	33	4.9
Altec-CM-1-S-IE-127-1.6x1.6-1.15	10.2	93.7	15.40	70	40	40	46	46	43	43	4.9
Altec-CM-1-S-IE-7-1.8x1.8-2.5	5.9	3.1	0.85	74	10	10	16	16	13	13	4.9
Altec-CM-1-S-IE-17-1.8x1.8-2.5	5.9	7.4	2.05	74	15	15	21	21	18	18	4.9
Altec-CM-1-S-IE-31-1.8x1.8-2.5	5.9	13.6	3.76	74	20	20	26	26	23	23	4.9
Altec-CM-1-S-IE-63-1.8x1.8-2.5	5.9	27.6	7.64	74	20	40	26	46	43	23	4.9
Altec-CM-1-S-IE-71-1.8x1.8-2.5	5.9	31.2	8.61	74	30	30	36	36	33	33	4.9
Altec-CM-1-S-IE-127-1.8x1.8-2.5	5.9	55.7	15.40	74	40	40	46	46	43	43	4.9
Altec-CM-1-S-IE-7-1.8x1.8-2.0	7.4	3.8	0.85	73	10	10	16	16	13	13	4.4
Altec-CM-1-S-IE-17-1.8x1.8-2.0	7.4	9.2	2.05	73	15	15	21	21	18	18	4.4
Altec-CM-1-S-IE-31-1.8x1.8-2.0	7.4	16.8	3.76	73	20	20	26	26	23	23	4.4
Altec-CM-1-S-IE-63-1.8x1.8-2.0	7.4	34.1	7.64	73	20	40	26	46	43	23	4.4
Altec-CM-1-S-IE-71-1.8x1.8-2.0	7.4	38.5	8.61	73	30	30	36	36	33	33	4.4
Altec-CM-1-S-IE-127-1.8x1.8-2.0	7.4	68.8	15.40	73	40	40	46	46	43	43	4.4
Altec-CM-1-S-IE-7-1.8x1.8-1.5	9.9	5.0	0.85	72	10	10	16	16	13	13	4.3
Altec-CM-1-S-IE-17-1.8x1.8-1.5	9.9	12.1	2.05	72	15	15	21	21	18	18	4.3
Altec-CM-1-S-IE-31-1.8x1.8-1.5	9.9	22.1	3.76	72	20	20	26	26	23	23	4.3
Altec-CM-1-S-IE-63-1.8x1.8-1.5	9.9	45.0	7.64	72	20	40	26	46	43	23	4.3
Altec-CM-1-S-IE-71-1.8x1.8-1.5	9.9	50.8	8.61	72	30	30	36	36	33	33	4.3



Altec-CM-1-S-IE-127-1.8x1.8-1.5	9.9	90.9	15.40	72	40	40	46	46	43	43	4.3
Altec-CM-1-S-IE-7-1.8x1.8-1.3	11.4	5.7	0.85	71	10	10	16	16	13	13	4.3
Altec-CM-1-S-IE-17-1.8x1.8-1.3	11.4	13.8	2.05	71	15	15	21	21	18	18	4.3
Altec-CM-1-S-IE-31-1.8x1.8-1.3	11.4	25.1	3.76	71	20	20	26	26	23	23	4.3
Altec-CM-1-S-IE-63-1.8x1.8-1.3	11.4	51.0	7.64	71	20	40	26	46	43	23	4.3
Altec-CM-1-S-IE-71-1.8x1.8-1.3	11.4	57.6	8.61	71	30	30	36	36	33	33	4.3
Altec-CM-1-S-IE-127-1.8x1.8-1.3	11.4	103.1	15.40	71	40	40	46	46	43	43	4.3
Altec-CM-1-S-IE-7-1.8x1.8-1.15	12.9	6.4	0.85	70	10	10	16	16	13	13	4.3
Altec-CM-1-S-IE-17-1.8x1.8-1.15	12.9	15.3	2.05	70	15	15	21	21	18	18	4.3
Altec-CM-1-S-IE-31-1.8x1.8-1.15	12.9	28.1	3.76	70	20	20	26	26	23	23	4.3
Altec-CM-1-S-IE-63-1.8x1.8-1.15	12.9	57.0	7.64	70	20	40	26	46	43	23	4.3
Altec-CM-1-S-IE-71-1.8x1.8-1.15	12.9	64.3	8.61	70	30	30	36	36	33	33	4.3
Altec-CM-1-S-IE-127-1.8x1.8-1.15	12.9	115.0	15.40	70	40	40	46	46	43	43	4.3
Altec-CM-1-S-IE-7-2.0x2.0-2.5	7.3	3.8	0.85	74	10	10	16	16	13	13	4.9
Altec-CM-1-S-IE-17-2.0x2.0-2.5	7.3	9.2	2.05	74	15	15	21	21	18	18	4.9
Altec-CM-1-S-IE-31-2.0x2.0-2.5	7.3	16.8	3.76	74	20	20	26	26	23	23	4.9
Altec-CM-1-S-IE-63-2.0x2.0-2.5	7.3	34.2	7.64	74	20	40	26	46	43	23	4.9
Altec-CM-1-S-IE-71-2.0x2.0-2.5	7.3	38.6	8.61	74	30	30	36	36	33	33	4.9
Altec-CM-1-S-IE-127-2.0x2.0-2.5	7.3	68.9	15.40	74	40	40	46	46	43	43	4.9
Altec-CM-1-S-IE-7-2.0x2.0-2.0	9.1	4.7	0.85	73	10	10	16	16	13	13	4.8
Altec-CM-1-S-IE-17-2.0x2.0-2.0	9.1	11.3	2.05	73	15	15	21	21	18	18	4.8
Altec-CM-1-S-IE-31-2.0x2.0-2.0	9.1	20.7	3.76	73	20	20	26	26	23	23	4.8
Altec-CM-1-S-IE-63-2.0x2.0-2.0	9.1	42.0	7.64	73	20	40	26	46	43	23	4.8
Altec-CM-1-S-IE-71-2.0x2.0-2.0	9.1	47.3	8.61	73	30	30	36	36	33	33	4.8
Altec-CM-1-S-IE-127-2.0x2.0-2.0	9.1	84.7	15.40	73	40	40	46	46	43	43	4.8
Altec-CM-1-S-IE-7-2.0x2.0-1.5	12.2	6.2	0.85	72	10	10	16	16	13	13	4.6
Altec-CM-1-S-IE-17-2.0x2.0-1.5	12.2	14.9	2.05	72	15	15	21	21	18	18	4.6
Altec-CM-1-S-IE-31-2.0x2.0-1.5	12.2	27.3	3.76	72	20	20	26	26	23	23	4.6
Altec-CM-1-S-IE-63-2.0x2.0-1.5	12.2	55.5	7.64	72	20	40	26	46	43	23	4.6
Altec-CM-1-S-IE-71-2.0x2.0-1.5	12.2	62.7	8.61	72	30	30	36	36	33	33	4.6
Altec-CM-1-S-IE-127-2.0x2.0-1.5	12.2	112.0	15.40	72	40	40	46	46	43	43	4.6
Altec-CM-1-S-IE-7-2.0x2.0-1.3	14.1	7.1	0.85	71	10	10	16	16	13	13	4.7
Altec-CM-1-S-IE-17-2.0x2.0-1.3	14.1	17.0	2.05	71	15	15	21	21	18	18	4.7
Altec-CM-1-S-IE-31-2.0x2.0-1.3	14.1	31.1	3.76	71	20	20	26	26	23	23	4.7
Altec-CM-1-S-IE-63-2.0x2.0-1.3	14.1	63.2	7.64	71	20	40	26	46	43	23	4.7
Altec-CM-1-S-IE-71-2.0x2.0-1.3	14.1	71.3	8.61	71	30	30	36	36	33	33	4.7
Altec-CM-1-S-IE-127-2.0x2.0-1.3	14.1	127.5	15.40	71	40	40	46	46	43	43	4.7
Altec-CM-1-S-IE-7-2.0x2.0-1.15	15.9	8.3	0.85	70	10	10	16	16	13	13	4.7
Altec-CM-1-S-IE-17-2.0x2.0-1.15	15.9	20.0	2.05	70	15	15	21	21	18	18	4.7
Altec-CM-1-S-IE-31-2.0x2.0-1.15	15.9	36.6	3.76	70	20	20	26	26	23	23	4.7
Altec-CM-1-S-IE-63-2.0x2.0-1.15	15.9	74.3	7.64	70	20	40	26	46	43	23	4.7
Altec-CM-1-S-IE-71-2.0x2.0-1.15	15.9	84.0	8.61	70	30	30	36	36	33	33	4.7
Altec-CM-1-S-IE-127-2.0x2.0-1.15	15.9	150.0	15.40	70	40	40	46	46	43	43	4.7

- To place the order for purchasing module or get additional information, you should write full designation of the module you selected. To do this, you should fill in all the groups of the module designation.



- the number of leg couples, the cross-section of legs, the height of legs are selected from the catalogue of basic 210 modules or the catalogue of complete series of 2100 modules;
  - maximum operating temperature is selected from 150 or 200 °C;
  - metallization is selected from positions - M or O (M - metallized external ceramic surfaces, O - absence of metallization);
  - variant of module design and attachment of conductors are selected from Figs.1-9 of section "Designations of modules";
  - sealing type is selected from four positions - E, S, C, O (E - epoxy sealant, S - silicone sealant, C - encapsulated case, O - unsealed).
- The data on the reliability of modules, prices, other information is given to your request.

**For additional information or placing orders apply to us:**

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by fax: (380-3722)-41917

by telephone: (380-372)-585648, (380-3722)-44422, (380-3722)-41909;

by mail: Box 86, General Post Office, 58002, Chernivtsi, Ukraine.

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