INSTITUTE
OF THERMOELECTRICITY
• UKRAINE •

MODULES FOR THERMOELECTRIC GENERATORS

ALTEC - 1060-1084

Operating temperatures 30-300^{0}C

• Designed for creation of thermoelectric generators used as a low-temperature stage of heat engines, internal combustion engines, diesel engines, gas turbines, etc. by using the heat of exhaust gases, as well as for creation of thermal and electricity generators with catalytic flameless combustion of gas or liquid fuel. Thus, full ecological purity of generators operation is achieved.

• Designed for creation of stand-alone electric energy sources with various heat sources: industry with heat releasing processes; garbage incineration; nuclear reactors, isotopes; geothermal waters, solar energy, hot petroleum on sea drilling rigs.

• The operating principle of thermoelectric generator modules is based on direct thermal into electric energy conversion using thermoelectricity.

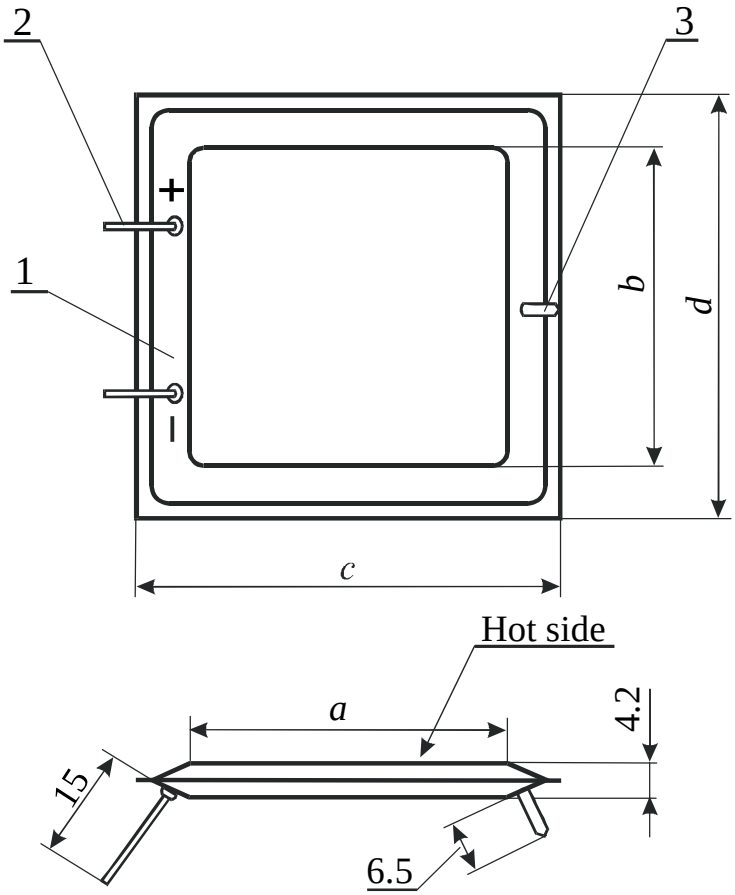
Appearance of generator module

• The module consists of thermocouples connected electrically in series and thermally in parallel. The thermoelements are made of special thermoelectric materials, included functionally graded, providing their maximum efficiency over a wide temperature range.

General properties of modules

• Hot-side operating temperature under long-term operation	300 °C and lower
• Permissible overheating of hot side	300 - 400 °C
• Cold side operating temperature	30-80°C
• Permissible overheating of cold side	120°C
• Number of “heating-cooling” cycles	up to 20000

Schematic diagram of generator module housing



1 - case; 2 –electric conductors;
3 – hermetically sealed tube for filling the case with inert gas

Module type	*a, mm*	*b, mm*	*c, mm*	*d, mm*
Altec –1060÷1064	42	42	56	56
Altec –1065÷1068	32	32	44	44
Altec –1069÷1073	32	62	48	78
Altec –1074÷1080	62	62	77	77
Altec –1081÷1084	92	92	108	108

- The modules offer enhanced reliability due to the use of latest technique for legs connection and arrangement in sealed metal cases made of stainless thin-wall steel, as well as special electric connections inside the module increasing reliability parameter MTBF by a factor of 50-2800.

- The modules are produced according to a special flexible technology making possible elaboration of their new variants without additional expenses.

Parameters of thermoelectric modules

Module type	Size, mm	U_{max}, V	I_{max}, A	W_{max}, W	Q_{max},W	η_{max}, %	M
Altec 1060 1067	40x40x4.0	4.8±0.2	1.7±0.07	8.0±0.3	123±5	6.5±0.3	1
Altec 1061	40x40x4.0	2.4±0.1	3.4±0.15	8.0±0.3	123±5	6.5±0.3	1
Altec 1062	40x40x4.0	1.2±0.05	6.8±0.3	8.0±0.3	123±5	6.5±0.3	80
Altec 1063	40x40x4.0	0.6±0.03	13.5±0.5	8.0±0.3	123±5	6.5±0.3	350
Altec 1064	40x40x4.0	0.28±0.02	28.4±1	8.0±0.3	123±5	6.5±0.3	600
Altec 1065	30x30x4.0	1.04±0.05	4.7±0.2	4.9±0.2	75±5	6.5±0.3	1
Altec 1066	30x30x4.0	0.51±0.02	9.6±0.4	4.9±0.2	75±5	6.5±0.3	50
Altec 1067	30x30x4.0	0.34±0.02	14.4±0.6	4.9±0.2	75±5	6.5±0.3	190
Altec 1068	30x30x4.0	0.17±0.01	28.0±1.5	4.9±0.2	75±5	6.5±0.3	400
Altec 1069	30x60x4.0	2.2±0.1	4.1±0.1	8.0±0.3	123±5	6.5±0.3	1
Altec 1070	30x60x4.0	1.0±0.05	8.2±0.4	8.0±0.3	123±5	6.5±0.3	90
Altec 1071	30x60x4.0	0.65±0.03	12.5±0.6	8.0±0.3	123±5	6.5±0.3	270
Altec 1072	30x60x4.0	0.32±0.02	25.0±2	8.0±0.3	123±5	6.5±0.3	520
Altec 1073	30x60x4.0	0.16±0.01	45.2±3	7.2±0.3	130±5	5.5±0.3	840
Altec 1074	60x60x4.0	3.8±0.2	4.3±0.2	16.5±0.6	250±10	6.5±0.3	1
Altec 1075	60x60x4.0	1.9±0.1	8.6±0.4	16.5±0.6	253±10	6.5±0.3	150
Altec 1076	60x60x4.0	1.3±0.05	12.5±0.6	16.1±0.6	247±10	6.5±0.3	450
Altec 1077	60x60x4.0	1.0±0.05	16.5±0.7	16.1±0.6	247±10	6.5±0.3	580
Алтек 1078	60x60x4.0	0.6±0.03	25.0±1.5	16.1±1.5	247±10	6.5±0.3	940
Altec 1079	60x60x4.0	0.31±0.02	44.0±3	14.0±0.6	254±10	5.5±0.3	1500
Altec 1080	60x60x4.0	0.17±0.01	79.2±5	13.8±0.6	250±10	5.5±0.3	2800
Altec 1081	90x90x4.0	8.6±0.4	4.3±0.2	37.0±2	570±25	6.5±0.3	1
Altec 1082	90x90x4.0	5.3±0.2	7.0±0.4	37.0±2	570±25	6.5±0.3	170
Altec 1083	90x90x4.0	2.8±0.2	11.4±0.5	31.8±0.2	578±25	5.5±0.3	600
Altec 1084	90x90x4.0	1.39±0.07	22.0±1	33.0±2	555±25	6.0±0.3	1140

*M is coefficient for enhanced reliability modules showing how many times MTBF of enhanced reliability modules is greater as compared to standard reliability modules Altec-1060, 1061, 1065, 1069, 1074, 1081. The information on MTBF values is provided at the buyers' request.

Modules Characteristics at intermediate temperatures

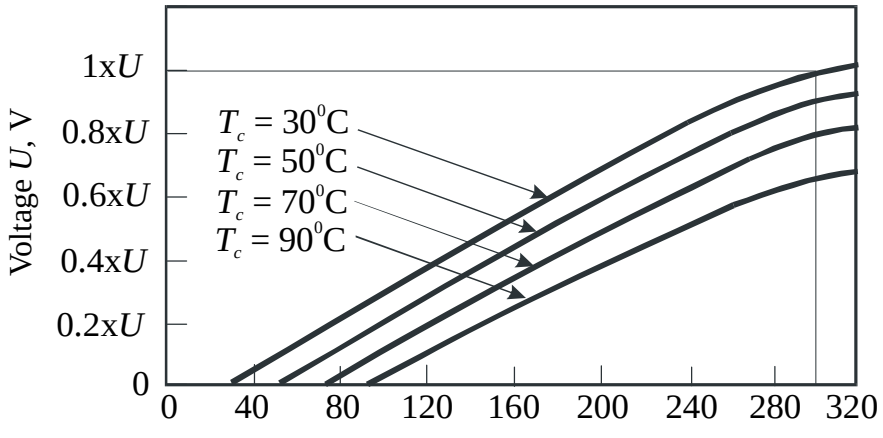


Fig. 1

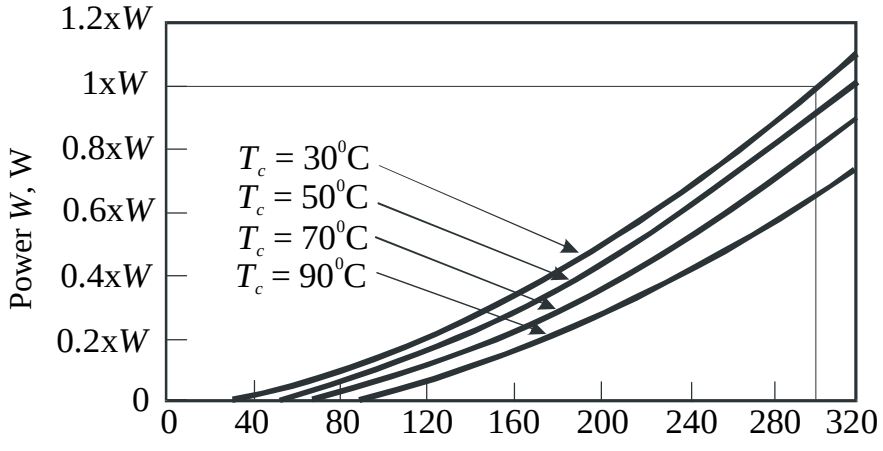


Fig. 2

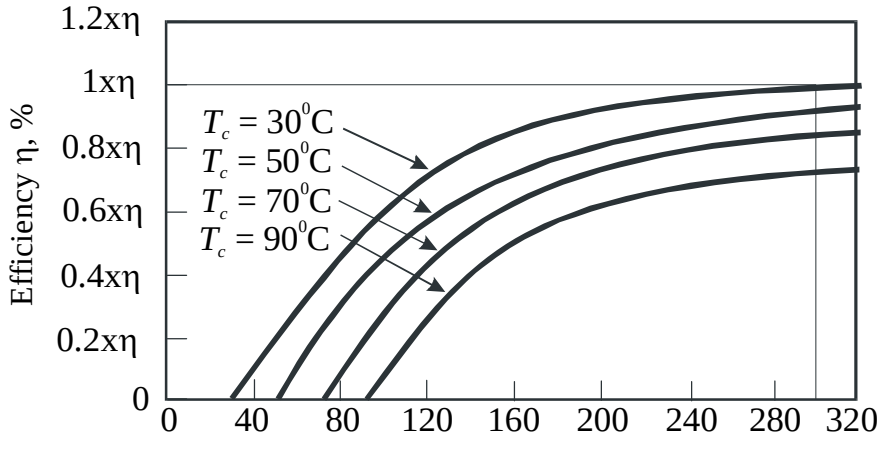


Fig. 3

Orders and additional information: General Post Office, Box 86, Chernivtsi, 58002, Ukraine; E-mail: ite@inst.cv.ua; fax: (380-3722)-41917; phone: (380-3722)-41917; http://ite.cv.ukrtel.net/altec