

# **Thermoelectric Modules Market by Type (Generators, Coolers), Module (General-purpose, Deep Cooling, Thermal Cycling, Others), Stage (Single-stage, Multi-stage), Sector (Consumer Electronics, Automotive, Others) & Geography - Global Forecasts to 2030**

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## **Abstracts**

Thermoelectric Modules Market by Type (Generators, Coolers), Module (General-purpose, Deep Cooling, Thermal Cycling, Others), Stage (Single-stage, Multi-stage), Sector (Consumer Electronics, Automotive, Others) & Geography - Global Forecasts to 2030

The research report titled 'Thermoelectric Modules Market by Type (Generators, Coolers), Module (General-purpose, Deep Cooling, Thermal Cycling, Others), Stage (Single-stage, Multi-stage), Sector (Consumer Electronics, Automotive, Others) & Geography - Global Forecasts to 2030', provides in-depth analysis of thermoelectric modules market across five major geographies and emphasizes on the current market trends, market sizes, market shares, recent developments, and forecasts till 2030.

The global thermoelectric modules market is projected to reach \$1.46 billion by 2030, at a CAGR of 10.6% during the forecast period 2023–2030. The growth of the thermoelectric modules market is driven by the factors such as the growing use of thermoelectric modules in electronic devices and the rising adoption of electric and luxury vehicles. However, the high manufacturing costs of thermoelectric modules compared to traditional heating/cooling systems restrain the growth of this market.

The simultaneous heating and cooling properties of TEMs and the benefits of thermoelectric coolers over conventional cooling devices are expected to create market growth opportunities. However, the challenges associated with reliability, durability, and

design complexity pose significant hurdles for companies operating in the thermoelectric modules market.

Based on type, the global thermoelectric modules market is segmented into thermoelectric generators and thermoelectric coolers. In 2023, the thermoelectric coolers segment is expected to account for the larger share of the global thermoelectric modules market. The large market share of this segment is attributed to its growing adoption in EVs and luxury vehicles, the benefits of thermoelectric coolers over conventional systems, and the development of thermoelectric coolers for new application areas. However, the thermoelectric generators segment is projected to record the highest CAGR during the forecast period.

Based on module type, the global thermoelectric modules market is segmented into general-purpose modules, deep cooling modules, thermal cycling modules, high-power modules, telecom-grade modules and other modules. In 2023, the thermal cycling module segment is expected to account for the largest share of the global thermoelectric modules market. The large market share of this segment is attributed to the simultaneous heating and cooling properties of TEMs. However, the deep cooling module segment is projected to register the highest CAGR during the forecast period.

Based on stage, the global thermoelectric modules market is segmented into single-stage modules and multi-stage modules. In 2023, the single-stage modules segment is expected to account for the larger share of the global thermoelectric modules market. The large market share of this segment is attributed to the rising use of single-stage thermoelectric modules in a wide range of heating and cooling applications and the continuous launch of innovative products by key players to cater to growing demand. However, the multi-stage modules segment is projected to register the highest CAGR during the forecast period.

Based on sector, the global thermoelectric modules market is segmented into consumer electronics, telecommunications, automotive, medical devices, industrial, and other sectors. In 2023, the consumer electronics segment is expected to account for the largest share of the global thermoelectric modules market. The large market share of this segment is attributed to the increasing adoption of thermoelectric modules by manufacturers of consumer electronics to constantly innovate and improve product designs. This helps create smaller, thinner, lighter and more reliable products that meet customer demands. However, the automotive segment is projected to register the higher CAGR during the forecast period.

Based on geography, the thermoelectric modules market is segmented into North America, Europe, Asia-Pacific, Latin America, and the Middle East & Africa. In 2023, Asia-Pacific is expected to account for the largest share of the global thermoelectric modules market. Asia-Pacific has a booming consumer electronics industry, and the region is the largest manufacturer and end-user of consumer electronics devices. With the increasing disposable incomes of the region's middle-class population, the demand for electronic products is expected to grow further in the coming years, driving the growth of the thermoelectric modules market in Asia-Pacific.

#### Key Players:

Some of the key players operating in the thermoelectric modules market are Ferrotec Holdings Corporation (Japan), TEC Microsystems GmbH (Germany), Crystal Ltd. (Russia), Coherent Corp. (U.S.), KELK Ltd. (Japan) (a subsidiary of Komatsu Ltd.), KRYOTHERM (Russia), Laird Thermal Systems, Inc. (U.S.), Phononic (U.S.), Guangdong Fuxin Technology Co. Ltd (China), Align Sourcing LLC. (U.S.), KYOCERA Corporation (Japan), HiTech Technologies, Inc. (U.S.), Hi-Z Technology, Inc. (U.S.), Z-MAX Co.Ltd. (China), and EVERREDtronics Ltd. (China).

#### Key questions answered in the report-

Which are the high-growth market segments based on type, module type, stage, and sector?

What was the historical market for thermoelectric modules?

What are the market forecasts and estimates for the period 2023–2030?

What are the major drivers, restraints, and opportunities in the thermoelectric modules market?

Who are the major players, and what shares do they hold in the thermoelectric modules market?

How is the competitive landscape in the thermoelectric modules market?

What are the recent developments in the thermoelectric modules market?

What are the different strategies adopted by the major players in the

thermoelectric modules market?

What are the key geographic trends, and which are the high-growth countries?

Who are the local emerging players in the global thermoelectric modules market, and how do they compete with the other players?

Scope of the report:

Thermoelectric Modules Market, by Type

Thermoelectric Generators

Thermoelectric Coolers

Thermoelectric Modules Market, by Module Type

General-purpose Modules

Deep Cooling Modules

Thermal Cycling Modules

High-power Modules

Telecom-grade Modules

Other Modules

Thermoelectric Modules Market, by Stage

Single-stage Modules

Multi-stage Modules

## Thermoelectric Modules Market, by Sector

Consumer Electronics

Telecommunications

Automotive

Medical Devices

Machinery and Equipment

Other Sectors

## Thermoelectric Modules Market, by Geography

North America

U.S.

Canada

Europe

U.K.

Germany

France

Italy

Spain

Sweden

Denmark

Rest of Europe

Asia-Pacific

China

India

Japan

South Korea

Taiwan

Singapore

Rest of Asia-Pacific

Latin America

Brazil

Mexico

Rest of Latin America

Middle East & Africa

UAE

Israel

Rest of Middle East & Africa

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