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Global LIN-Controlled Electronic Expansion Valve for Electric Vehicles Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market size was valued at US$ 285 million in 2025 and is forecast to a readjusted size of US$ 1388 million by 2032 with a CAGR of 23.4% during review period.

LIN-Controlled Electronic Expansion Valve for Electric Vehicles refers to an electronic expansion valve used in new energy vehicle thermal management systems that receives commands from the vehicle controller or thermal management controller through the LIN bus and precisely regulates refrigerant flow. The product typically consists of a valve body, valve needle or valve core, stepper motor or actuator, drive control circuit, LIN communication interface, and sealing structure. It is mainly used in battery thermal management, cabin air conditioning, heat pump systems, electric drive cooling, and power electronics cooling. Compared with PWM-controlled electronic expansion valves, LIN-controlled electronic expansion valves support digital communication, enabling valve opening feedback, fault diagnosis, status monitoring, and more refined system-level coordination, making them an important actuator as electric vehicle thermal management systems move toward higher integration, intelligence, and energy efficiency. In 2025, global production of LIN-Controlled Electronic Expansion Valves for Electric Vehicles reached 11,681 thousand units, with an average selling price of USD 23.75 per unit.

The LIN-Controlled Electronic Expansion Valve for Electric Vehicles industry is a key actuator segment within new energy vehicle thermal management systems. The product is mainly used for throttling, refrigerant flow regulation, operating-mode switching, and partial shut-off control in refrigerant circuits. As electric vehicles increasingly adopt heat-

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pump air conditioning, battery cooling, e-drive cooling, and power electronics thermal management, the electronic expansion valve has evolved from a simple throttling component into an intelligent actuator within the vehicle-level thermal control strategy. Compared with PWM-controlled valves, LIN-controlled valves are better suited for status feedback, fault diagnosis, software calibration, and multi-valve coordination, supporting higher penetration in mid- to high-end EV platforms and heat-pump systems. Sanhua Automotive’s electronic expansion valve supports LIN/PWM communication and highlights a LIN integrated control board with OBD function, while Chunhui’s LIN-controlled product features LIN digital signal control, firmware update via LIN bus, and real-time stall detection.

In terms of product structure, the industry can be segmented by control method into LIN-controlled, PWM-controlled, and other control types. LIN-controlled products are mainly used in vehicle platforms requiring stronger communication diagnostics, precise valve-opening control, and system-level coordination. By system position, products can be divided into heat-pump circuit valves, battery cooling circuit valves, cabin evaporator circuit valves, and valves used in integrated thermal management modules. By refrigerant compatibility, mainstream products cover R134a, R1234yf, and CO?/R744 platforms. EV thermal management systems typically include compressors, condenser/evaporator heat exchangers, chillers, heat-pump circuits, multiple expansion valves, and bypass valves. Expansion valves play a core role in refrigerant metering and pressure regulation across heat-pump, cooling, and battery temperature-control modes, directly affecting energy efficiency, response speed, and thermal stability.

From the application perspective, LIN-controlled electronic expansion valves for EVs are mainly used in passenger-car thermal management systems and are gradually expanding into electric commercial vehicles, electric buses, special-purpose vehicles, and high-end integrated thermal management modules. Passenger-car applications emphasize miniaturization, low noise, low leakage, fast response, and low power consumption, while commercial vehicle and bus applications place greater emphasis on heating/cooling capacity, durability, and adaptability to complex operating conditions. Regionally, China is one of the most important production and demand markets, supported by large EV output, increasing heat-pump adoption, and a well-developed local thermal management supply chain. Europe, North America, Japan, and South Korea are more focused on premium vehicle platforms, system integration, and global Tier 1 supply chains. Webasto’s electric vehicle thermal management architecture integrates battery, powertrain, electronics, and cabin temperature control, which further increases the system value of intelligent valve components.

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On the manufacturing side, the core production processes include precision machining of valve bodies, valve needle/core forming, stepper motor or actuator assembly, control board soldering and potting, sealing component assembly, leak testing, flow calibration, LIN communication testing, pressure testing, and durability validation. The cost structure is mainly composed of valve bodies and precision mechanical parts, actuating motors, control PCBs and chips, connectors and harnesses, sealing materials, automated assembly, and testing costs. A mature automated production line typically has a single-line annual capacity of 0.8–2.0 million units, depending on cycle time, testing duration, product platform consistency, and automation level. Where multi-station flow calibration, leak testing, and LIN communication testing are required, the testing section often becomes the capacity bottleneck. The industry gross margin is generally 25%–35%; suppliers with high-integration LIN-controlled products, large platform-based orders, and in-house control board or algorithm capabilities usually achieve higher margins, while simple contract manufacturing or low-end PWM products tend to have lower margins.

From the value chain and competitive landscape perspective, the upstream segment includes aluminum alloy and stainless-steel valve materials, precision machined parts, stepper motors, magnetic materials, MCUs and driver ICs, PCBs, connectors, sealing components, and refrigerant-compatible materials. The midstream segment consists of electronic expansion valve and thermal management valve manufacturers, while downstream customers include automakers, thermal management system integrators, air-conditioning system suppliers, and battery thermal management module manufacturers. The competitive landscape is characterized by the coexistence of global automotive thermal management Tier 1 suppliers, Chinese specialist valve manufacturers, and regional automotive component companies. Barriers to entry are concentrated in functional safety, durability validation, leakage control, refrigerant compatibility, software communication protocols, and mass-production consistency. Looking ahead, the industry will continue to upgrade from LIN control toward stronger diagnostics and software-defined control, while becoming more closely integrated with thermal management modules, CO? heat-pump systems, low-GWP refrigerant platforms, and multi-valve coordinated control. Product value is expected to shift from stand-alone valve hardware toward integrated capabilities covering valve body, actuator, control board, software calibration, and system validation.

This report is a detailed and comprehensive analysis for global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the

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competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market size and forecasts, in consumption value ($ Million), sales quantity (K Units), and average selling prices (US$/Unit), 2021-2032

Global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market size and forecasts by region and country, in consumption value ($ Million), sales quantity (K Units), and average selling prices (US$/Unit), 2021-2032

Global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market size and forecasts, by Type and by Application, in consumption value ($ Million), sales quantity (K Units), and average selling prices (US$/Unit), 2021-2032

Global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market shares of main players, shipments in revenue ($ Million), sales quantity (K Units), and ASP (US$/Unit), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for LIN-Controlled Electronic Expansion Valve for Electric Vehicles

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

This report profiles key players in the global LIN-Controlled Electronic Expansion Valve for Electric Vehicles market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Zhejiang

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Sanhua Automotive Components, TGK, Zhejiang Dun'an Artificial Environment, HANON, Egelhof, Fujikoki, Schrader Pacific Advanced Valves (Pacific Industrial), XINJING, Hilite International, Ningbo Tuopu, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

LIN-Controlled Electronic Expansion Valve for Electric Vehicles market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

EXV for Air Conditioning Thermal Management

EXV for Battery Thermal Management

Market segment by Driving Method

Electromagnetic Type

Electro-electric Type

Market segment by Sales Channel

Direct Sales

Distribution

Market segment by Application

BEV

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PHEV

Major players covered

Zhejiang Sanhua Automotive Components

TGK

Zhejiang Dun'an Artificial Environment

HANON

Egelhof

Fujikoki

Schrader Pacific Advanced Valves (Pacific Industrial)

XINJING

Hilite International

Ningbo Tuopu

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

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The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe LIN-Controlled Electronic Expansion Valve for Electric Vehicles product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of LIN-Controlled Electronic Expansion Valve for Electric Vehicles, with price, sales quantity, revenue, and global market share of LIN-Controlled Electronic Expansion Valve for Electric Vehicles from 2021 to 2026.

Chapter 3, the LIN-Controlled Electronic Expansion Valve for Electric Vehicles competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the LIN-Controlled Electronic Expansion Valve for Electric Vehicles breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026.and LIN-Controlled Electronic Expansion Valve for Electric Vehicles market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of LIN-Controlled Electronic Expansion Valve for Electric Vehicles.

Chapter 14 and 15, to describe LIN-Controlled Electronic Expansion Valve for Electric Vehicles sales channel, distributors, customers, research findings and conclusion.

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