
INDUSTRY OVERVIEW

The information and statistics set out in this section and other sections of this Document were extracted from different official government publications, available sources from public market research and other sources from independent suppliers and from the independent industry report prepared by China Insights Consultancy (the “CIC Report”). We engaged CIC to prepare the CIC Report, an independent industry report, in connection with the [REDACTED]. Information and statistics from official government sources have not been independently verified by us, the Joint Sponsors, the [REDACTED], the [REDACTED], the [REDACTED] and the [REDACTED], any of the [REDACTED], any of our or their respective directors, officers or representatives or any other person involved in the [REDACTED] and no representation is given as to their correctness or accuracy.

OVERVIEW OF GLOBAL PAN-SEMICONDUCTOR QUALITY CONTROL SOLUTIONS INDUSTRY

The pan-semiconductor ecosystem covers key segments including PCB manufacturing, wafer fabrication and packaging and testing, serving as the core foundation enabling computing, signal transmission and system performance in downstream applications. With the rapid development of AI data centers, intelligent robots and low-altitude economy, pan-semiconductor products are evolving toward higher performance, greater reliability and increasing complexity, resulting in more complex manufacturing processes and stricter yield management requirements.

Against this backdrop, demand for pan-semiconductor quality control solutions has grown rapidly. These solutions refer to integrated systems deployed across the manufacturing processes of pan-semiconductor products, combining specialized inspection equipment, intelligent algorithms and data analytics capabilities to monitor, identify and optimize key process parameters, product defects and performance indicators in real time, enabling comprehensive quality management throughout the production process. Driven by increasing demand from downstream sectors, together with continued capacity expansion across the industry, the market size of global pan-semiconductor quality control solutions industry, in terms of revenue, increased from RMB43.7 billion in 2020 to RMB83.5 billion in 2025, and is expected to reach RMB130.4 billion in 2030, representing a CAGR of 9.3% from 2025 to 2030. As a relatively mature segment within the pan-semiconductor industry, PCBs serve as the foundational carrier for signal transmission and component integration. Their quality directly affects the stability and reliability of downstream electronic devices, making PCB quality control solutions an important segment within the broader market.

ANALYSIS OF GLOBAL PCB QUALITY CONTROL SOLUTIONS INDUSTRY

Overview of the Development of Global PCB Industry

Structural growth in high-end PCB demand driven by upgrades of technologies

With the continued evolution of AI technologies and the ongoing development of downstream application sectors, PCBs, as the fundamental carrier for computing power, signal transmission and system interconnection in electronic systems, are evolving toward higher-end technological specifications and optimized product structures, driving structural growth in demand for high-end PCBs.

- **AIDCs:** As computing power scales up and system architectures become increasingly complex, AIDCs impose more stringent requirements on PCBs in terms of layer count, interconnection density, high-speed signal integrity and operational reliability. Specifically, as the scale of large-model training and inference expands, AI servers place higher performance requirements on PCBs used to carry chips and enable high-speed signal transmission, directly stimulating demand for high-layer-count PCBs and HDI PCBs. Meanwhile, the growing adoption of advanced packaging by AI accelerator chips is driving strong demand for IC substrates, a high value-added PCB segment. In addition, rising demand for high-speed interconnections within AIDCs has increased optical

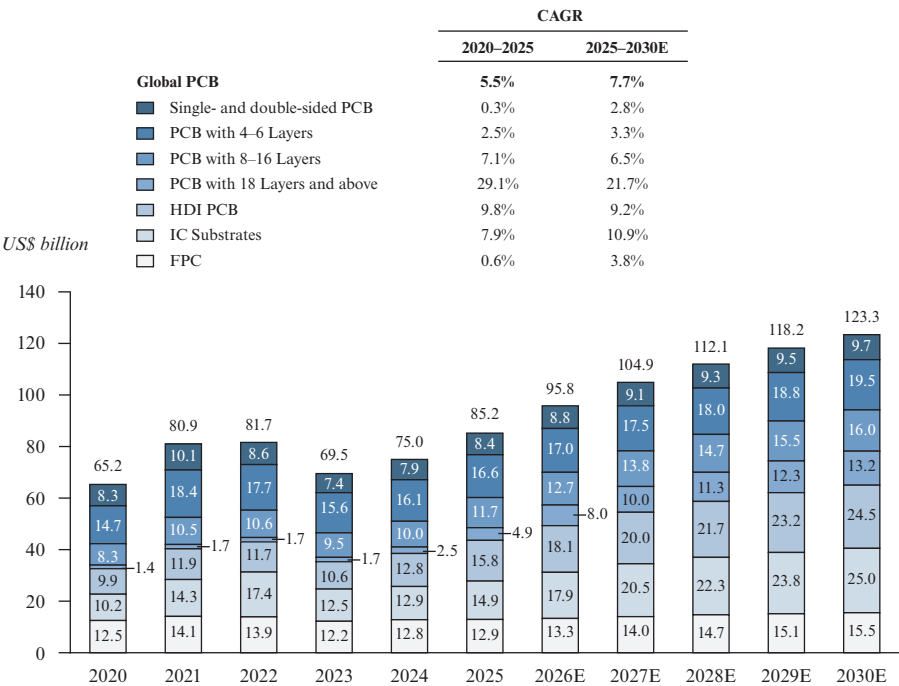
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module penetration, with single-module data rates evolving toward 800G and above. This trend imposes higher requirements on PCB signal integrity and long-term reliability, further expanding the application scope of high-end PCBs.

- **Intelligent robots:** Advancements in AI technologies and upgrades in software and hardware are enhancing robots’ perception, decision-making and motion control capabilities. These improvements impose higher requirements on PCBs in terms of high-density integration, high reliability and anti-interference performance, thereby driving sustained demand growth for HDI PCBs and high-layer-count PCBs.
- **Low-altitude economy:** The low-altitude economy industry is rapidly developing, driven by advances in technologies and the continuous improvement of aircraft supporting systems. To meet the needs of flight control, real-time communication and environmental perception, related systems require PCBs with lightweight design, high-frequency performance and high reliability, thereby gradually driving demand growth for PCBs in this sector.
- **Other applications:** Ongoing development in next-generation communications, automotive electronics, medical electronics and consumer electronics continues to support stable demand for high-end PCBs, underpinning overall industry growth.

In terms of revenue, the market size of the global PCB industry is expected to increase from US\$85.2 billion in 2025 to US\$123.3 billion in 2030, representing a CAGR of 7.7%. Within this growth cycle, high-end PCB products serve as the core growth drivers. The global market sizes of PCBs with 18 layers and above, HDI PCBs and IC substrates are expected to increase from US\$4.9 billion, US\$15.8 billion and US\$14.9 billion in 2025 to US\$13.2 billion, US\$24.5 billion and US\$25.0 billion in 2030, representing CAGRs of 21.7%, 9.2% and 10.9%, respectively, significantly outpacing overall industry growth and driving the shift toward higher-end, higher value-added products.

Market Size of Global PCB Industry, in terms of Revenue, by Product Types, 2020–2030E



Source: Expert interviews, Industry publications, CIC

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Supply gap in high-end PCBs driving new capacity expansion

Currently, the global PCB industry shows a highly imbalanced capacity structure. The majority of existing production capacity is concentrated in mid- to low-end production lines, with core technical capabilities such as processing precision, lamination capability and impedance control inadequate for high-speed, high-layer-count and high-density interconnect PCBs. This structural mismatch in production capacity has directly resulted in a significant supply gap for high-end PCB products, which has become a key bottleneck for AI development.

To capture growth in the high-end PCB market and address this supply shortfall, leading global PCB manufacturers have launched investment plans, including building new high-end lines and upgrades to existing facilities. Since 2025, leading PCB manufacturers have cumulatively announced over RMB130.0 billion in planned investment in high-end PCB capacity expansion. These plans cover core products such as high-layer-count PCBs, HDI PCBs and IC substrates. With these projects gradually coming online, the global PCB industry has entered a new expansion cycle focused on high-end capacity.

Rising importance of quality control

The rapid growth of demand for high-end PCBs has raised requirements for manufacturing stability and yield control, thereby elevating the strategic importance of quality control processes. As a result, the PCB quality control solutions industry is entering a phase of both demand expansion and technological upgrading.

- **Increased configuration demand:** High-end PCBs feature denser circuitry, more complex structures and higher unit value. Even minor defects can scrap entire boards, causing significant economic losses. This has led PCB manufacturers to shift from traditional sampling to full-sample inspection. Meanwhile, longer process flows and more process steps require monitoring at additional critical nodes, further increasing the deployment density of quality control solutions. Investment in these solutions as a percentage of total PCB production equipment is expected to rise from around 15.0% in 2025 to 20.0% in 2030.
- **Enhanced performance requirements:** High-end PCB specifications place higher standards on quality control solutions. In optical inspection, finer line precision and more complex structures result in micro-scale and diverse defects, driving the adoption of AI-enabled software integrated with high-resolution imaging hardware. This enables flexible adjustment of inspection parameters, as well as data analysis and intelligent decision-making based on collected data, thereby supporting product quality trend alerts. In electrical testing, stricter requirements for impedance consistency and electrical stability are prompting improvements in testing accuracy, data reliability and analytical capability, with software enabling the receipt and analysis of data from other manufacturing systems, as well as the real-time transmission of testing results to data platforms linked with customers, supporting product-level quality traceability. These trends increase the technological value of quality control solutions, evolving them from basic “quality checkpoints” into core safeguards for yield and risk management.

Definition and Classification of PCB Quality Control Solutions

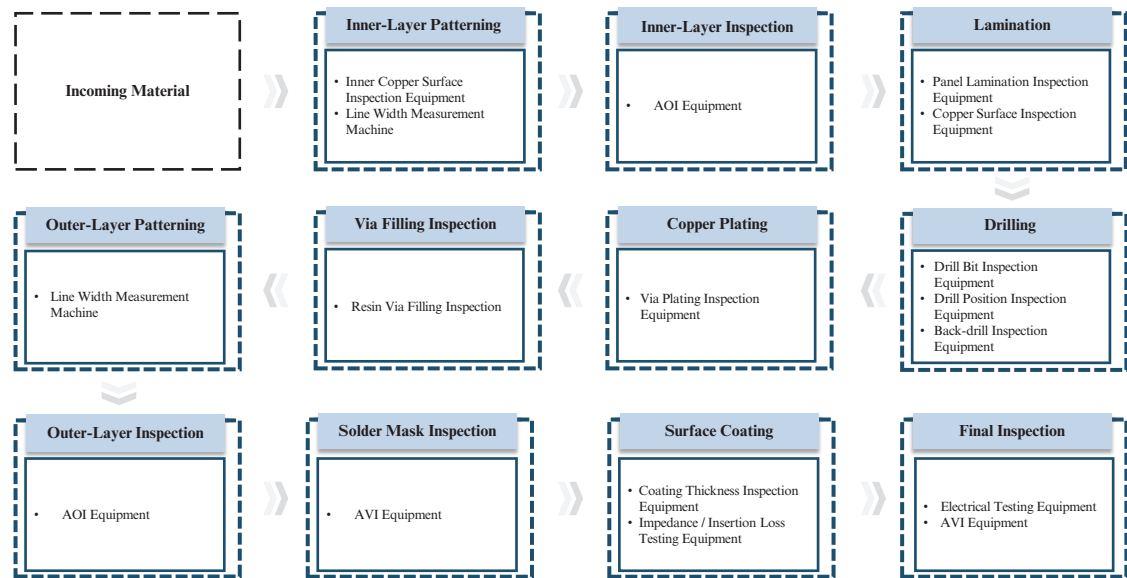
PCB quality control solutions refer to integrated solutions centered on optical imaging, electrical signal testing and AI technologies. They consist of inspection equipment with intelligent recognition algorithms, along with pre-sales assessment and solution design, production line

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deployment, on-site commissioning and continuous operation and maintenance services, forming a comprehensive quality control framework covering the entire PCB manufacturing process. These solutions primarily comprise the following two key categories:

- Optical inspection solutions:** Leveraging technologies such as optical imaging and deep learning, these solutions conduct detection and evaluation of PCB surface conditions, circuit pattern accuracy and critical dimensional parameters. Such solutions are applied throughout the entire PCB production process, including front-end processes (such as inner-layer patterning and inner-layer inspection), mid-process stages (such as lamination, drilling and electroless copper plating) and back-end processes (such as final inspection).
- Electrical testing solutions:** By applying electrical signals to PCBs and collecting response data to simulate actual operating conditions, these solutions verify and assess electrical connectivity and key electrical performance parameters. Such solutions are applied in the back-end final inspection process.

Overview of PCB Quality Control Process



Source: Industry publications, CIC

Market Size of Global PCB Quality Control Solutions Industry

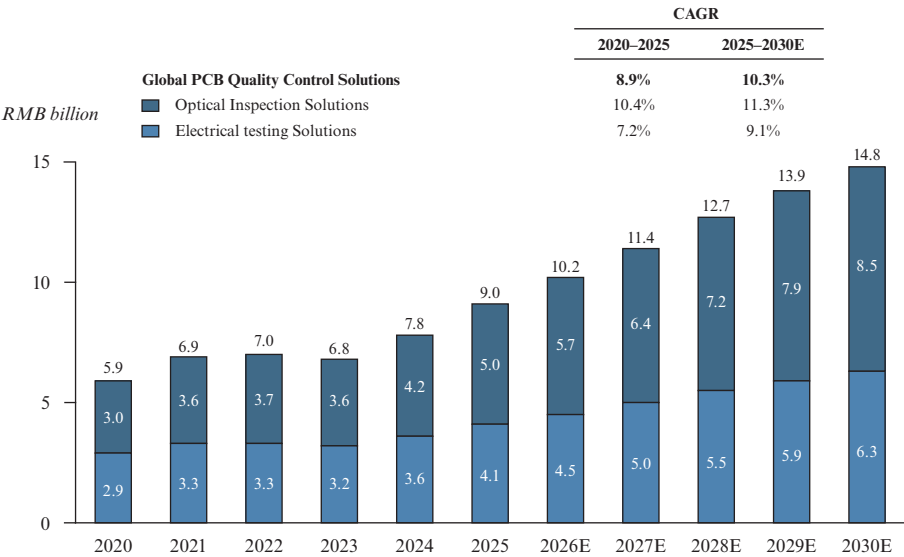
Driven by the structural upgrading of the PCB industry and the expansion of production capacity, the market size of the global PCB quality control solutions industry increased from RMB5.9 billion in 2020 to RMB9.0 billion in 2025, and is expected to further increase to RMB14.8 billion in 2030, representing a CAGR of 10.3% from 2025 to 2030.

Breakdown by product types

Within the global PCB quality control market, optical inspection solutions, essential for verifying appearance and its pattern accuracy and conformity, as well as physical dimensions across the production process, have become indispensable amid capacity expansion. In terms of revenue, the market size of the global PCB optical inspection solutions industry is expected to increase from RMB5.0 billion in 2025 to RMB8.5 billion in 2030, representing a CAGR of 11.3%. Electrical testing, a core process for ensuring PCB electrical reliability and functional integrity, is also a critical component of PCB quality management. In terms of revenue, the market size of the global PCB electrical testing solutions industry is expected to increase from RMB4.1 billion in 2025 to RMB6.3 billion in 2030, representing a CAGR of 9.1%.

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Market Size of Global PCB Quality Control Solutions Industry, in terms of Revenue, by Product Types, 2020–2030E

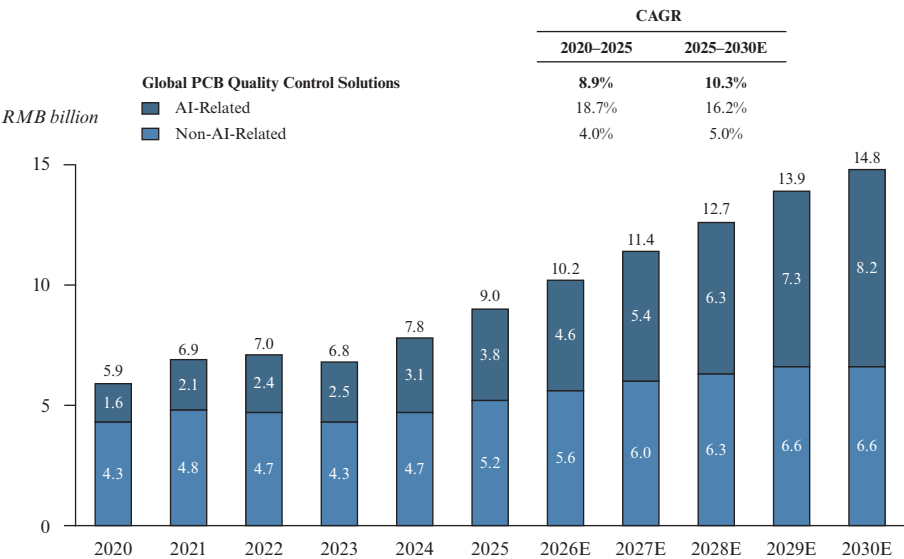


Sources: Expert interviews, Industry publications, CIC

Breakdown by applications

Within the global PCB quality control solutions market, AI-related application segments demonstrate strong growth. The global market size of PCB quality control solutions in the AI-related sector is expected to increase from RMB3.8 billion in 2025 to RMB8.2 billion in 2030, representing a CAGR of 16.2%. Non-AI-related application segments, serving as the foundational component of the market and covering fields such as intelligent robots, low-altitude economy, next-generation communications, automotive electronics, medical electronics and consumer electronics, have maintained stable growth.

Market Size of Global PCB Quality Control Solutions Industry, in terms of Revenue, by Applications, 2020–2030E



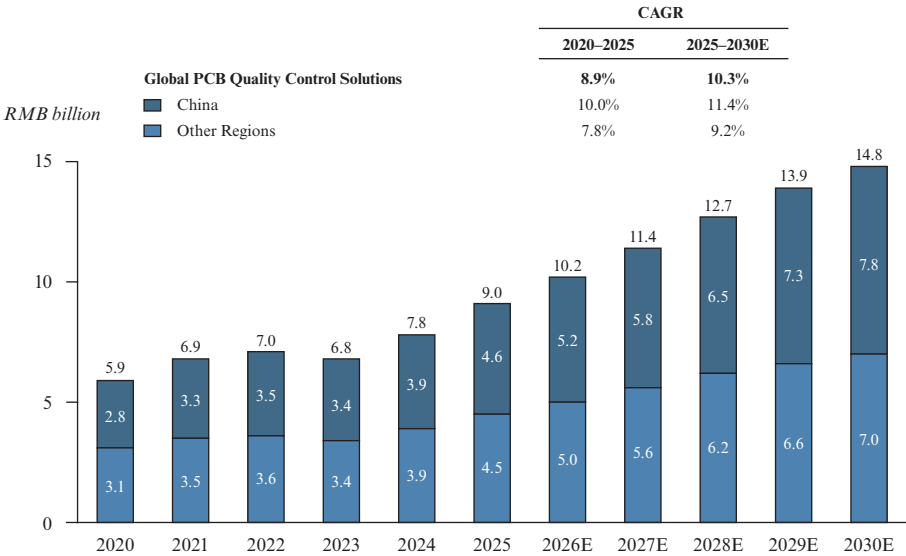
Sources: Expert interviews, Industry publications, CIC

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Breakdown by regions

Within the global PCB quality control solutions market, China, as the world’s largest PCB manufacturing center in terms of production capacity, represents a core market. In terms of revenue, the market size of China’s PCB quality control solutions industry is expected to increase from RMB4.6 billion in 2025 to RMB7.8 billion in 2030, representing a CAGR of 11.4% from 2025 to 2030. Meanwhile, driven by global policy dynamics and the regional expansion of downstream PCB manufacturers, market demand for PCB quality control solutions has gradually extended to emerging markets such as Southeast Asia.

Market Size of Global PCB Quality Control Solutions Industry, in terms of Revenue, by Regions, 2020–2030E



Sources: Expert interviews, Industry publications, CIC

Growth Drivers of Global PCB Quality Control Solutions Industry

- **Expansion of high-end PCB production capacity:** As production capacity for high-layer-count PCBs, HDI PCBs and IC substrates continues to expand, manufacturing process complexity increases accordingly. Given the higher unit value of high-end PCBs, defects occurring at any stage may result in substantial economic losses, elevating the importance of quality control processes. Downstream manufacturers have correspondingly increased both the deployment quantity and investment proportion of PCB quality control solutions, directly driving market demand.
- **High-end PCB upgrading raising requirements for detection precision and intelligence:** High-end PCBs require fine-line precision, interlayer alignment, impedance consistency and stable electrical performance. These requirements drive demand for higher detection accuracy, automation and intelligence in quality control. To address complex structures and high reliability requirements, PCB quality control solutions are evolving from standardized configurations toward high-end intelligent systems. This transformation enhances detection speed, precision and false-negative control capabilities, while promoting industry development toward higher selling prices and greater value-added content.
- **Supportive policy environment:** As a critical component of the PCB industry chain, the PCB quality control segment has benefited in recent years from national policies supporting high-end manufacturing and intelligent manufacturing development. In 2023, the Ministry of Industry and Information Technology issued the Action Plan for the High-Quality Development of the PCB Industry (《印制电路板产业高质量发展行动计划》), encouraging the

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advancement of high-end PCB manufacturing technologies and supporting the development of related quality control equipment. In 2024, the State Council issued the Opinions on Deeply Implementing the “AI+” Initiative (《關於深入實施「人工智能+」行動的意見》), which promotes the deep integration of AI with various industries and sectors of the society. The rapid development of AI and related industries is increasing demand for high-end PCB, thereby raising the demand for PCB quality control solutions.

Trends of Global PCB Quality Control Solutions Industry

- ***Software and algorithm capabilities becoming core competitive advantages:*** As PCB product structures become increasingly complex, hardware performance alone is insufficient to meet high-precision, high-efficiency inspection requirements. Software systems integrated with AI algorithms are able to process image and test data in real time, and leverage defect and design databases to enable automated defect identification and classification, thereby continuously improving detection accuracy and stability while reducing miss rates and false defect rates. These capabilities enable the solutions to manage quality in real time and enhance efficiency and reliability throughout the production lifecycle, forming key competitive advantages for solution providers.
- ***Integration of conventional inspection functions:*** As conventional PCB inspection technologies mature inspection methods, process adaptability and application scenarios, industry focus has shifted from improving precision to optimizing efficiency and overall cost. In this context, previously decentralized inspection functions are rapidly moving toward integration. Solution providers consolidate multiple inspection functions onto unified equipment platforms through technological integration, which reduces process switching and redundant inspection steps. This improves inspection efficiency, shortens production cycles, lowers equipment footprint and operational complexity and enhances overall production line efficiency.
- ***Specialization of high-end quality control solutions:*** To meet the inspection requirements of high-end PCBs, solution providers are developing specialized solutions targeting impedance consistency, inductance characteristics, high-voltage insulation performance and key structures such as micro blind vias, buried vias and embedded components. By refining targeted algorithm training and strengthening R&D investment, quality control capabilities are evolving toward greater specialization and precision, better supporting the core quality control and reliability requirements of high-end PCB manufacturing.
- ***Global business and service expansion:*** Amid global supply chain restructuring and to expand market coverage and optimize manufacturing costs, global PCB manufacturers are accelerating overseas capacity deployment. To follow this globalization trend and expand market presence, PCB quality control solution providers are also expanding their business coverage and strengthening service networks in emerging regions such as Southeast Asia. This enables them to support cross-regional needs, enhance responsive support and maintain close engagement with customers.
- ***Strengthening competitiveness of Chinese providers:*** As China’s PCB industry chain continues to mature, collaboration among upstream component suppliers, equipment manufacturers and downstream PCB producers has intensified. Chinese providers work closely with upstream suppliers to advance independent R&D in core components and technologies, including optical systems and advanced electrical testing, enhancing solutions performance. In addition, as a significant share of global PCB production capacity is located in China, Chinese providers benefit from proximity to downstream manufacturers, enabling faster service response and stronger localized support, with the ability to engage in plant planning and solutions design at an early stage, thereby strengthening their overall competitiveness.

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Competitive Landscape of Global and China’s PCB Quality Control Solutions Industry

In 2025, in terms of global revenue from PCB quality control solutions, our Company ranked second among all providers and first among all Chinese providers, with a market share of 8.4%.

Rankings of Global PCB Quality Control Solution Providers, by 2025 Revenue

Ranking	Providers	Headquarters	Revenue ⁽¹⁾ (RMB million)	Market Share (%)
1	Company A ⁽²⁾	Japan	~800.0	~8.8%
2	Our Company	Shenzhen, China	763.7	8.4%
3	Company B ⁽³⁾	Shenzhen, China	586.9	6.5%
4	Company C ⁽⁴⁾	Taiwan, China	~450.0	~5.0%
5	Company D ⁽⁵⁾	Germany	~330.0	~3.6%
Total			~2,930.6	~32.3%

Notes:

- (1) The revenue includes global revenue generated from both PCB optical inspection solutions and PCB electrical testing solutions.
- (2) Company A, founded in 1991 and headquartered in Japan, is a private company primarily engaged in supplying PCB electrical testing solutions. Its parent company is listed on the Tokyo Stock Exchange.
- (3) Company B, founded in 1999 and headquartered in Shenzhen, China, is a private company primarily engaged in supplying PCB electrical testing solutions. Its parent company is listed on both the Shenzhen Stock Exchange and the Hong Kong Stock Exchange.
- (4) Company C, founded in 1998 and listed on the Taiwan Stock Exchange, is headquartered in Taiwan, China and is primarily engaged in supplying optical inspection solutions for PCB and semiconductor applications.
- (5) Company D, founded in 1972 and headquartered in Germany, is a private company primarily engaged in supplying PCB electrical testing solutions. Its parent company is listed on NASDAQ Stock Exchange.

Sources: Public filings of listed companies, Expert interviews, Industry publications, CIC

In 2025, in terms of revenue from PCB quality control solutions in China, our Company ranked first among all providers in China, with a market share of 13.8%.

Rankings of PCB Quality Control Solution Providers in China, by 2025 Revenue

Ranking	Providers	Headquarters	Revenue ⁽¹⁾ (RMB million)	Market Share (%)
1	Our Company	Shenzhen, China	630.0	13.8%
2	Company B	Shenzhen, China	~530.0	~11.6%
3	Company C	Taiwan, China	~300.0	~6.6%
4	Company A	Japan	~250.0	~5.5%
5	Company D	Germany	~210.0	~4.6%
Total			~1,920.0	~42.1%

Notes:

- (1) The revenue includes revenue generated from both PCB optical inspection solutions and PCB electrical testing solutions in China.

Sources: Public filings of listed companies, Expert interviews, Industry publications, CIC

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Entry Barriers and Key Success Factors in Global PCB Quality Control Solutions Industry

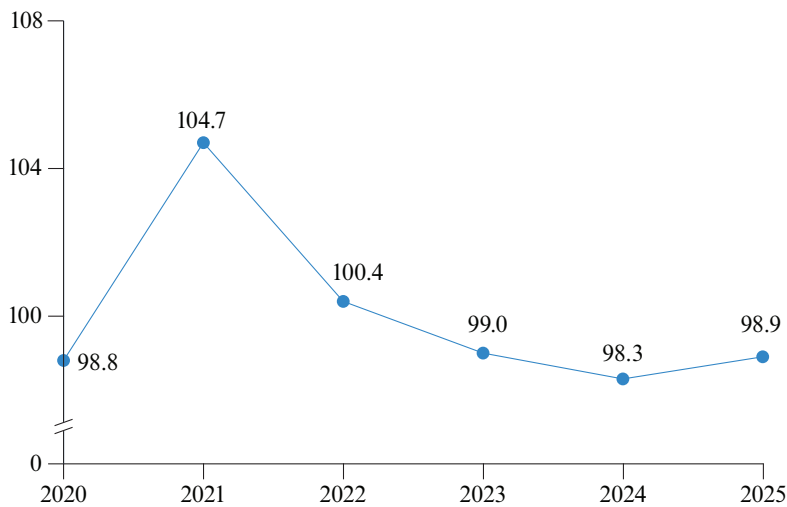
- **Full-stack R&D capability:** The stability and accuracy of PCB quality control solutions are critical to PCB production. Providers must address technological challenges spanning optics, electrical signal testing, software algorithms and mechanical structure development. Leading providers with long-term technological accumulation have achieved full-stack in-house R&D capabilities, enabling accurate anticipation of technological trends and rapidly respond to high-end PCB process upgrades.
- **Comprehensive and high-quality solution portfolio:** The PCB manufacturing process involves multiple inspection stages, including optical inspection and electrical testing across various application scenarios, with increasingly stringent requirements on product quality. Leveraging their full-stack R&D capabilities, leading providers can offer comprehensive and high-quality solution portfolios covering multiple processes and inspection types, significantly reducing procurement complexity and vendor coordination for customers, while ensuring higher inspection accuracy and consistency, thereby enhancing customer stickiness and long-term cooperation.
- **Rapid response and localized services:** PCB manufacturers impose stringent requirements on full-process responsiveness, pre-sales assessment and solutions design, on-site commissioning and after-sales maintenance. In addition to offering comprehensive and high-quality solution portfolios, leading providers possess well-established localized service networks and can deeply participate in process planning and production line configuration. This enables them to respond promptly to evolving production requirements and continuously optimize solutions, thereby ensuring stable operation and iterative upgrades throughout the product lifecycle. New entrants, lacking established service networks and experience, struggle to meet these expectations.
- **Customer certification barriers:** PCB manufacturers impose strict standards on solutions technical performance and delivery reliability. Switching suppliers involves high validation costs and potential quality fluctuation risks. Leading providers that passed customer certification with full-stack R&D capability, comprehensive and high-quality solution portfolio, as well as rapid response and localized services tend to establish stable relationships and strong customer stickiness. New entrants, lacking certification and service track records, may face significant challenges in qualifying with key customers.
- **Global business coverage and service network:** As PCB manufacturers expand overseas and diversify global production capacity, global coverage and service capabilities have become a core competitive factor for quality control solution providers. Leading providers with full-stack technology, comprehensive solution portfolios, established service capabilities, and a stable, broad customer base are well positioned to expand globally. With global presence and service networks, they can serve customers across regions, enabling timely delivery, localized support and efficient service response. New entrants without such global coverage and service capabilities may struggle to meet global customers' delivery efficiency requirements.

Analysis of Raw Materials of Global PCB Quality Control Solutions Industry

PCB quality control solutions rely on a wide range of raw materials and components, including mechanical components such as motors, guide rails and metal structural parts, optical devices such as industrial cameras, lenses and light sources, testing probes and signal connection modules, and electronic components. Motors are key mechanical components for motion control, supporting equipment stability and operational accuracy. Their prices increased during 2020 to 2021 due to supply chain constraints and rising raw material costs, and gradually declined and stabilized from 2022 to 2025.

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Producer Price Index for Motor Manufacturing Industry⁽¹⁾, 2020–2025



Notes:

(1) The Producer Price Index for motor manufacturing industry measures changes in ex-factory prices of motors, serving as an indicator of pricing trends at the production level.

Sources: National Bureau of Statistics, China Insights Consultancy

SOURCE OF INFORMATION

In connection with the [REDACTED], we engaged CIC, an independent market research consultant, to conduct an analysis of, and to prepare a report about the global PCB quality control solutions industry. The CIC Report has been prepared by CIC independent of the influence of our Group and other interested parties. We have agreed to pay CIC a total fee of RMB600,000 for the preparation and use of the CIC Report, and we believe that such fees are consistent with the market rate. CIC is a consulting firm founded in Hong Kong and provides professional industry consulting services across multiple industries. CIC’s services include industry consultancy services, commercial due diligence and strategic consulting.

CIC conducted both primary and secondary research using a variety of resources. Primary research involved interviewing key industry experts and leading industry participants. Secondary research involved analyzing data from various publicly available data sources. The market projections in the commissioned report are based on the following key assumptions: (i) given China’s enduringly stable political system, effective social governance and robust economic foundation, it is anticipated that the overall social, economic and political environments in China will remain stable during the forecast period; (ii) according to the National Bureau of Statistics of China, key economic indicators such as gross Domestic Product (“GDP”), industrial added value and urbanization rate have shown an upward trend in China over the past decade. Therefore, we believe that the economic and industry development in China is likely to maintain a steady growth trajectory during the forecast period, accompanied by continuing urbanization; (iii) related key industry drivers such the expansion of high-end PCB production capacity, the increasing complexity and quality requirements of high-end PCBs and the supportive policy environment are likely to propel continued growth in the global PCB quality control solutions industry throughout the forecast period; and (iv) there will be no extreme force majeure event or unforeseen industry regulation that may significantly or fundamentally affect the relevant market and industry.

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Unless otherwise specified, all data and forecasts contained in this section are derived from the consultancy report of CIC. The Directors, acting with reasonable prudence, confirmed that there has been no occurrence of adverse change in the overall market information that would subject the data to significant restrictions, contradiction or negative effects since the date of the consultancy report.