

Issue No. 385 4th Quarter 2024 November 2024

Bookings Up +13.4% in October and Sales up +7.1%

Regional Performance:

YTD, all regions except Europe and Japan are showing growth, with the greatest growth in Asia Pacific, where YTD billings have increased +15.9%, followed by China where sales increased +10.8%. Japan and Europe, the only regions exhibiting a decline, have YTD billings of -15.4% and -2.9% respectively. See page 5.

Industry Backlog:

October backlog was \$21,419 million (14.2 weeks).

2024 Currency Impact:

The industry registered a YOY increase in sales in October 2024, of +6.7% in local currency and an increase in sales of +7.1% in USD.

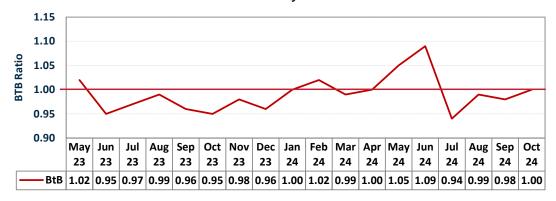
NEW BISHOP RESEARCH REPORT

Top 100 Connector Manufacturers October bookings increased +13.4% year-over-year and +7.4% year-to-date, while billings increased +7.1% year-over-year and +4.2% year-to-date.



The book-to-bill ratio in October was 1.00, up from 0.98 in September.

Connector Industry Book-to-Bill



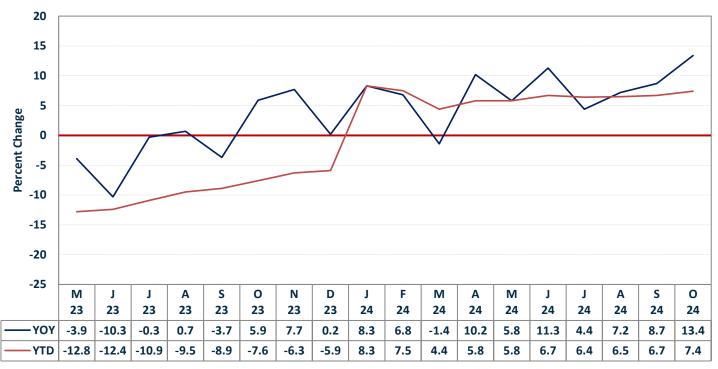


Booking Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Bookings Percentage Change – 2022/2023/2024

		Sequential		`	Year-Over-Ye	ar		Year-To-Date	9
Month	2022	2023	2024	2022	2023	2024	2022	2023	2024
Jan	1.6%	-1.3%	9.6%	14.8%	-18.4%	8.3%	14.8%	-18.4%	8.3%
Feb	10.0%	10.1%	5.1%	7.3%	-13.8%	6.8%	10.8%	-18.4%	7.5%
Mar	-5.1%	1.2%	-2.9%	7.1%	-12.9%	-1.4%	9.1%	-16.6%	4.4%
Apr	-8.5%	-5.1%	3.2%	-6.4%	-9.7%	10.2%	5.1%	-15.0%	5.8%
May	6.6%	13.5%	9.1%	-5.1%	-3.9%	5.8%	2.9%	-12.8%	5.8%
Jun	-6.5%	-12.7%	-6.8%	-3.2%	-10.3%	11.3%	1.9%	-12.4%	6.7%
Jul	-9.7%	0.3%	-5.8%	-9.9%	-0.3%	4.4%	1.1%	-10.9%	6.4%
Aug	8.2%	9.2%	11.6%	-9.6%	0.7%	7.2%	-1.2%	-9.5%	6.5%
Sep	-1.1%	-5.4%	-5.0%	1.6%	-3.7%	8.7%	-0.9%	-8.9%	6.7%
Oct	-12.0%	-3.2%	2.9%	-16.3%	5.9%	13.4%	-2.4%	-7.6%	7.4%
Nov	10.0%	11.8%		-15.9%	7.7%		-3.7%	-6.3%	
Dec	-7.2%	-13.7%		-16.1%	0.2%		-4.7%	-5.9%	

Bookings - YOY and YTD



- October bookings increased +13.4% year-over-year.
- Orders increased +2.9% on a sequential basis in October.
- The book-to-bill ratio for September was 1.00. This is up from September's book-to-bill of 0.98.



Regional Performance: BOOKINGS

October 2024 Bookings

ROW

Total

YOY Region **Sequential YTD** NA 2.4% 14.7% 10.5% -5.6% 1.1% -7.8% **Europe** 0.5% 6.2% -3.0% **Japan** China 2.6% 16.5% 16.1% AP 21.6% 35.5% 24.7%

5.5%

2.9%



Year-to-date, October bookings increased by +7.4%.

-6.4%

13.4%

2.4%

7.4%

- Year-over-year orders in October rose in five of the six regions. North America, Europe, Japan, China, and Asia Pacific, saw increases with Asia Pacific showing the most growth at +35.5%, followed by China where bookings increased +16.5 YOY. The ROW, the only region showing a decrease, declined by -6.4%.
- YTD, similiar to August and September, saw all regions increase but Europe and Japan, where orders declined -7.8% and -3.0% respectively.



Billing Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Billings Percentage Change - 2022/2023/2024

		Sequential		١	'ear-Over-Yea	ar		Year-To-Date)
Month	2022	2023	2024	2022	2023	2024	2022	2023	2024
Jan	-5.1%	-3.1%	5.8%	11.4%	0.5%	3.5%	11.4%	0.5%	3.5%
Feb	11.4%	9.7%	2.8%	10.2%	-1.0%	-1.0%	10.8%	-0.3%	1.2%
Mar	-2.2%	-0.9%	0.4%	9.1%	0.3%	-1.1%	10.2%	-0.1%	0.4%
Apr	-6.7%	-7.9%	1.4%	3.0%	-1.0%	10.1%	8.4%	-0.3%	2.7%
May	11.6%	12.1%	4.4%	7.4%	-0.6%	2.8%	8.2%	-0.4%	2.7%
Jun	0.2%	-6.0%	-4.9%	11.9%	-6.7%	3.3%	8.8%	-1.5%	2.8%
Jul	-7.1%	-1.7%	1.8%	6.1%	-1.2%	7.1%	8.4%	-1.4%	3.4%
Aug	8.9%	7.2%	5.8%	6.3%	-2.8%	5.6%	8.1%	-1.6%	3.7%
Sep	5.1%	-2.7%	-3.0%	14.4%	-10.0%	5.1%	8.9%	-2.6%	3.9%
Oct	-14.0%	-2.1%	0.2%	1.9%	2.5%	7.1%	8.2%	-2.1%	4.2%
Nov	10.6%	7.9%		3.0%	0.0%		7.6%	-1.9%	
Dec	-9.8%	-12.4%		-1.6%	-2.8%		7.8%	-2.7%	

Billings - YOY and YTD



- October billings grew +4.2% year-to-date and +7.1% year-over-year.
- Sequentially, October billings increased +0.2%.

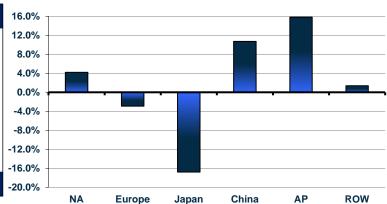


Regional Performance: BILLINGS

October 2024 Billings

Year-To-Date Billings by Region



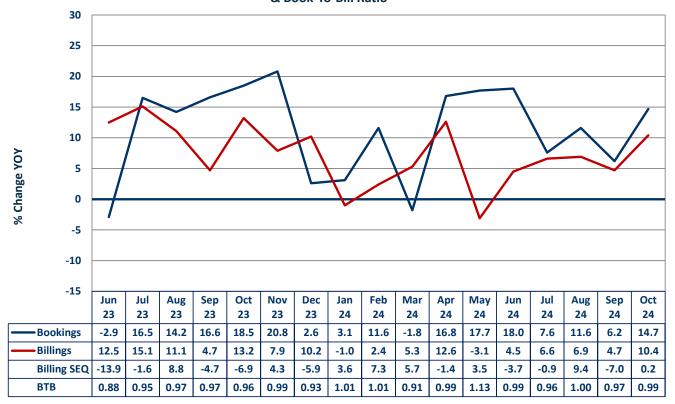


- October connector sales increased by +7.1% compared to the same period last year.
- All regions saw a sequential decrease except North America, Japan, and China, where sales increased +0.2%, +2.1%, and +10.9% respectively. All other regions saw a decrease, with Europe seeing the greatest decrease at -9.1%, followed by ROW, where sales decreased -7.0% sequential.
- Year-over-year, three of the six regions saw an increase, with the greatest increase coming from the Asia Pacific region at +16.6%, followed by China with an +11.2% increase. Europe saw the greatest decrease, declining -3.3%, while ROW saw a decline of -3.0%. Japan has now had a monthly year-over-year decrease in billings for all 10 months of 2024.
- YTD, all regions but Europe and Japan saw an increase, declining -2.9% and -15.4% respectively. Similiar to last month, the greatest growth YTD was in the Asia Pacific region, where sales grew +15.9%, followed by China, where sales grew +10.8%.



North America: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill (BTB) ratio is also displayed.

North America Bookings and Billings Year-Over-Year Percentage Change & Book-To-Bill Ratio



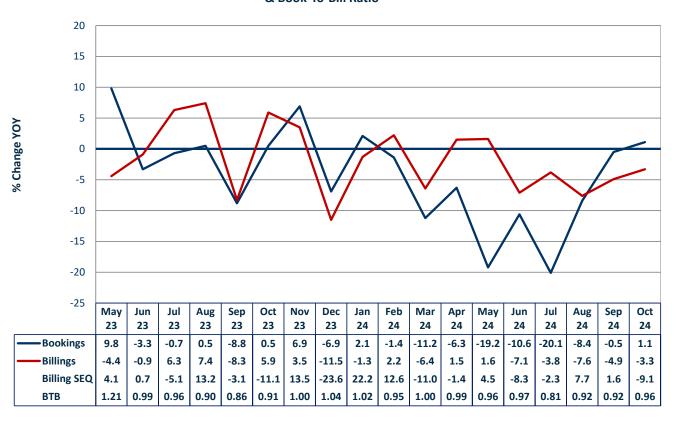
North America Performance

- Sales increased +10.4% year-over-year in North America in October, while orders grew +14.7%. Sequentially, North American billings increased +0.2%. The book-to-bill ratio was 0.99.
- According to the US Labor Department data, "the annual inflation rate in the US was 2.6% for the 12 months ending October, compared to the previous data rate increase of 2.4%."
- Industrial production in the United States decreased 0.3% in October of 2024 following a downwardly revised 0.7% fall in September.
- Manufacturing PMI increased to 48.5 in October, up from 47.3 points in September, the lowest reading since June of 2023.
- According to the US Bureau of Labor Statistics, the unemployment rate remained unchanged from September, coming in at 4.1%. October retail sales increased a seasonally adjusted 0.4%, same as last month.
- According to MarkLine, preliminary October new vehicles sales were up 9.5% over October 2023, contributed by the introduction of 2025 models and companies rushing to dispose of inventories of older models and EVs."



Europe: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.

Europe Bookings and Billings Year-Over-Year Percentage Change & Book-To-Bill Ratio



Europe Performance

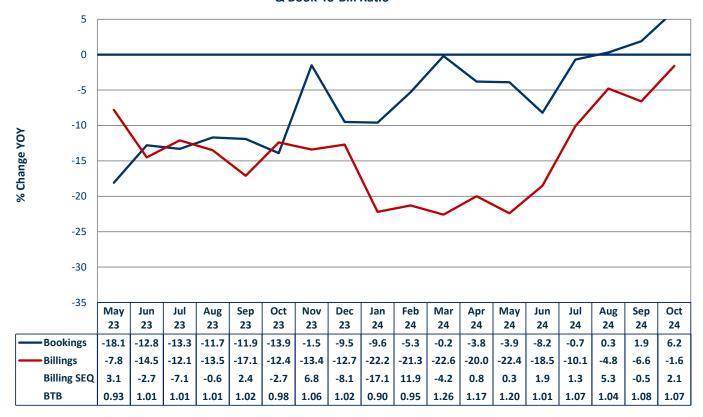
- Bookings increased +1.1% year-over-year in October, while billings decreased -3.3%. Sequentially, sales decreased -9.1%. The book-to-bill ratio was 0.96, up from 0.92 in September and August.
- According to Eurostat, seasonally adjusted industrial production decreased by 2.0% in both the euro area and the EU in September* when compared to August 2024. When compared to September of 2023, industrial production decreased by 2.8% in the euro area and by 2.4% in the EU.
- The annual inflation rate in the euro area increased to 2.0% in October from 1.7% in September. CPI in the euro area increased to 127.03 points. Trading Economics reported the HCOB Eurozone Manufacturing PMI rose to 46.0 in October 2024 from a preliminary of 45.9.
- In September 2024*, compared with August 2024, seasonally adjusted retail trade volume increased by 0.5% in the area. of the euro and 0.3% in the EU, according to initial estimates by Eurostat.
- In September 2024*, the eurozone unemployment rate was 6.3% compared to 6.1% in September 2023.
- In October 2024, the Economic Sentiment Indicator (ESI) in the euro area was down to 95.6, a 0.7 point decrease from September and the lowest reading since February.

*October readings not published at the time of this reporting.



Japan: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.

Japan Bookings and Billings Year-Over-Year Percentage Change & Book-To-Bill Ratio



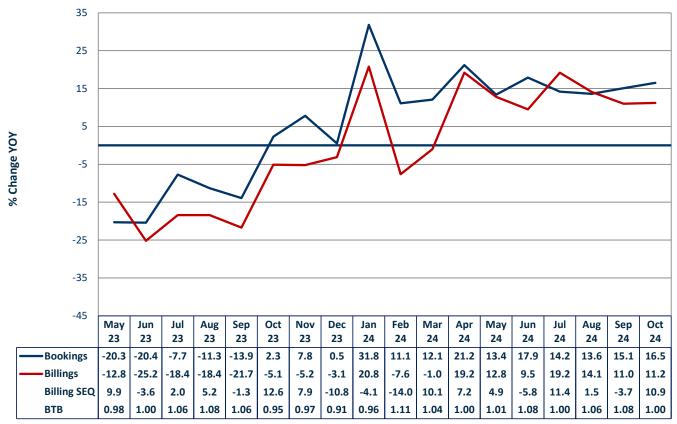
Japan Performance

- October, year-over-year bookings grew +6.2%, while sales dropped -1.6%. This is the smallest decrease in over two years! Sequentially, sales increased +2.1%. Japan's book-to-bill ratio was 1.07, down from 1.08 in September.
- Japan's October 2024 core CPI recorded +2.3% y/y, a decline in the y/y growth rate in comparison to the previous month. In September 2024, the core consumer price index (CPI) in Tokyo, Japan increased 2.0% year-on-year, breaking four straight months of acceleration in price growth.
- In October 2024, Japan's Purchasing Managers' Index (PMI) fell to 49.4, which was the lowest reading since November 2023. This indicated a contraction in private sector activity for the first time since June.
- According to MarkLine, Japanese new vehicle sales in October increased 1.2% year-over-year to 402.3K units.
- Japan's unemployment rate in October rose 0.1% from the previous month to 2.5%, increasing for the first time in three months. In October 2024, the inflation rate in Japan stood at 2.3%.
- Retail sales in Japan rose by 1.6% year-on-year in October 2024, up from a revised 0.7% gain in September.



China: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.





China Performance

- China's October sales grew +11.2% on a year-over-year basis, while bookings increased 16.5%. Sequentially, sales increased by +10.9%. The BTB decreased to 1.00, from 1.08 in September.
- China's exports in October 2024 grew 12.7% from a year ago in US dollar terms, while imports saw a decline of 2.3% y-o-y.
- On a month-on-month basis, China's CPI in October fell by 0.3% after it remained flat in September, according to the NBS.
- According to Trading Economics, "In October 2024, industrial production in China increased by 5.3%. On a month-to-month basis, industrial production grew by 0.41%."
- According to MarkLines, China's October vehicle production increased 3.6% year-over-year, while sales volumes increased 7.7% year-over-year. Year-to-date production and sales volumes were 24.466 million and 24.624 million, up 1.9% and 2.7% year-over-year respectively.
- China's surveyed urban unemployment rate was 5.0% in October 2024, down from 5.1% in September. This is a 0.2 percentage point decrease from the same period in 2023, according to Trading Economics.



Asia Pacific: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.

Asia Pacific Bookings and Billings Year-Over-Year Percentage Change & Book-To-Bill Ratio



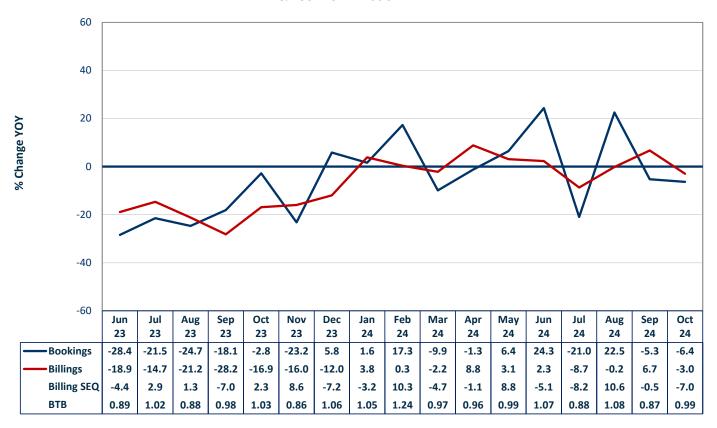
Asia Pacific Performance

- Year-over-year, October orders were up a solid +35.5%, while billings increased +16.6%. Sequentially, sales decreased -0.6%. The book-to-bill ratio was 1.11, up from 0.91 in September.
- The HSBC India Manufacturing PMI increased to 57.5 in October 2024 from 56.5 in the previous month.
- India's retail inflation is projected to surge to 6.15% in October, driven by a persistent rise in food prices and a lower year-ago base, according to Business Insider India.
- According to Trading Economics, the S&P Global South Korea Manufacturing PMI remained unchanged at 48.3 in October 2024.
- South Korea's adjusted unemployment rate rose slightly to 2.7% in October an increase from 2.5% in September according to Trading Economics.



Rest of World: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.

ROW Bookings and Billings Year-Over-Year Percentage Change & Book-To-Bill Ratio



Rest of World Performance

- Orders decreased -6.4%, while billings decreased -3.0% year-over-year. Sequentially, sales decreased by -7.0%. The book-to-bill ratio was 0.99, up from September, but still below August's 1.08 book to bill. It appears over the last six months, bookings and billings are on a perpetual roller coaster.
- "Brazil's annual inflation rate increased to 4.76% compared to 4.42% in September 2024, according to Trading Economics.
- According to Trading Economics, "The S&P Global Brazil Manufacturing PMI eased to 52.9 in October from 53.2 in September 2024, still pointing to solid growth across the manufacturing sector for the tenth straight month."
- According to Trading Economics, "Brazil's unemployment rate in September* 2024 was 6.4%. This
 was a significant drop from 6.9% in the previous quarter and was the lowest unemployment rate since
 the December 2013 quarter.

^{*}October readings not published at the time of this reporting.



Regional Summary Snapshot

The following table shows a snapshot of the performance of each region. The table displays the latest metric available, and the trend of the metric compared to prior months/quarters.

	North America	Europe	Japan	China	Asia Pacific	ROW
GDP Growth YOY	2.8% Steady	0.8% Steady	0.9% Down	4.8% Growing	N/A	N/A
Industrial Production Growth	-0.3% Down	-0.2% Down	3.0% Up	5.3% Down	N/A	N/A
Manufacturing PMI*	48.5 Up	46.0 Up	49.4 Down	50.1 Up	N/A	N/A
Inflation Rate	2.6% Up	2.0% Up	2.3% Down	0.3% Down	N/A	N/A
Unemployment Rate	4.1% Steady	6.3% Steady	2.5% Up	5.0% Steady	N/A	N/A
Retail Sales Growth YOY	0.4% Steady	0.5% Up	1.6% Up	4.8% Up	N/A	N/A
Oct. Connector Sales	10.4%	-3.3%	-1.6%	11.2%	16.6%	-3.0%
YTD Connector Sales	4.8%	-2.9%	-15.4%	10.8%	15.9%	0.9%
Oct. Connector Orders	14.7%	1.1%	6.2%	16.5%	35.5%	-6.4%
YTD Connector Orders	10.5%	-7.8%	-3.0%	16.1%	24.7%	2.4%

^{*} Purchasing Manager Index - Below 50 is contracting factory activity



The Industry Backlog Is 14.2 Weeks

The industry shipped \$1,505 million per week in October. As the table below shows, in October the ending backlog is \$21,419. Assuming the industry's weekly sales of \$1,505 million remain constant, the backlog represents 14.2 weeks of sales.

The following table shows the world connector backlog of orders ending October 2024.

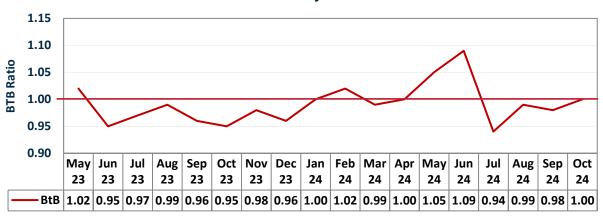
Industry Backlog

	2023	October 2024
BtB Ratio	1	1.00
Beginning Backlog	\$22,983	\$21,017
YTD Bookings	\$79,888	\$71,980
YTD Billings	\$81,854	\$71,578
Ending Backlog	\$21,017	\$21,419
Backlog in Weeks	13.4	14.2

\$ Millions

The book-to-bill ratio in October was 1.0. The following displays the trend of BTB ratios since April of 2023.

Connector Industry Book-to-Bill



The October 2024 ending backlog of \$21,419 million is \$402 million more than the 2023 ending backlog of \$21,017 million.

Change in Backlog

2023 Ending Backlog	\$21,017
2024 September Ending Backlog	\$21,419
Backlog Growth	\$402

\$ Millions



Currency Fluctuations Reduce Performance between USD and Local Currency

The dollar has been fluctuating against the euro, the yen, and the yuan. The following table measures the impact for October 2023 versus October 2024 and shows results for these three currencies.

Local Currency to One USD 2023 YTD versus 2024 YTD

Currency	2023	2024	% Change
Euro	0.9464	0.9171	3.2%
Yuan	7.2755	7.0817	2.7%
Yen	149.4966	149.6690	-0.1%

Europe, China, and Japan account for approximately 60% of world connector sales. Currency fluctuation against the US dollar can have a significant impact on our reporting of sales performance in US dollars.

The following table shows October YOY performance by region in US dollars and local currencies.

Industry Sales Performance October 2024 USD-vs-Local Currencies

Region	U.S.\$	Local Currency
North America	10.4%	10.4%
Europe	-3.3%	3.2%
Japan	-1.6%	-0.1%
China	11.2%	2.7%
Asia Pacific	16.6%	16.6%
ROW	-3.0%	-3.0%
World	7.1%	6.7%

Connector sales in October of 2024 increased +6.7% when measured in local currencies, versus an increase of +7.1% in US dollars.



2024 Outlook: YTD October

Over the past decade, year-to-date sales in October averaged 82.9% of full-year sales. Our global connector sales through October are \$71,578 million. Historically, on average, 2024 full year connector sales will be \$86,343 million (\$86,343 divided by 82.9%).

Since we shipped \$81,854 million in 2023, sales growth would be +5.5% (\$86,343 divided by \$81,854) in 2024.

The following table displays Bishop's 2024 forecast verses the historical methodology.

2024 Forecast Bishop vs. Historical Average

Methodology	Forecast	% Growth
Bishop	\$86,602	5.80%
Historical Average	\$86,343	5.50%

\$ Millions

Only two months remain in 2024 so we can conclude that full year growth will probably be in the +5.5% to +6.0% range. We do expect good order growth in November and December based on the positive order growth in the third quarter when year-over-year orders grew +8.7% in September and +7.3% in August, and October's growth of +13.4%.

All-in-all, 2024 will be a relatively good year for the connector industry.

The following table displays the 2024 Bishop Sales forecast by geographic region versus the actual results through October.

2024 Forecast Bishop vs. Actual Year-Over-Year % Change

Region	Bishop Forecast	October Actual YOY
North America	7.8%	10.4%
Europe	3.3%	-3.3%
Japan	3.0%	-1.6%
China	6.5%	11.2%
Asia Pacific	7.1%	16.6%
ROW	2.8%	-3.0%
Total World	5.8%	7.1%



Europe and Japan are underperforming against our forecast and North America, China, and Asia Pacific are overperforming based on our expectations.

As previously stated, November and December are expected to be good months and full year sales should be in the +5.5% to +6.0% range.



Significant Events

November 2024 News

Industry News

Molex Announces Agreement to Acquire AirBorn, Expanding its Position in the Aerospace and Defense Market

Molex announced the signing of an agreement to purchase AirBorn, Inc., an employee-owned company headquartered in Georgetown, TX, specializing in the design and manufacturing of rugged connectors and electronic components for global Original Equipment Manufacturers (OEMs) serving the aerospace and defense, commercial air, space exploration, medical and industrial markets.

Molex strengthens its aerospace and defense position with an agreement to acquire AirBorn, enhancing capabilities in rugged connectors and electronic components.

"The acquisition of AirBorn brings strong capabilities to Molex in the aerospace and defense market," said Joe Nelligan, CEO, Molex. "Combining Molex's engineering breadth and manufacturing scale with AirBorn's expertise in ruggedized, mission-critical products will enable us to better serve the evolving needs of our customers in this fast-growing global market."

For more than 60 years, AirBorn products have been trusted to perform in extreme conditions where mission-critical reliability is vital to success. "AirBorn will serve as the platform for Molex's aerospace and defense business, which is a powerful opportunity for our highly specialized team," said Michael Cole, President and CEO, AirBorn. "By uniting AirBorn's unique expertise in the aerospace and defense market with Molex's global scale, capabilities and financial stability, we will ensure long-term success in a rapidly expanding category."

The acquisition is expected to close by early December 2024, subject to regulatory approvals and other customary closing conditions. More information will be shared at that time. The details of the purchase price will not be disclosed.

Gartner Forecasts Worldwide Semiconductor Revenue to Grow 14% in 2025

Global semiconductor revenue is projected to grow 14% in 2025 to total \$717 billion, according to the latest forecast from Gartner, Inc. In 2024, the market is forecast to grow 19% and reach \$630 billion.

Following a decline in 2023, semiconductor revenue is rebounding and expected to record double-digit growth in 2024 and 2025. "The growth is driven by a continued surge in Al-related semiconductor demand and recovery in electronic production, while demand from the automotive and industrial sectors continues to be weak," said Rajeev Rajput, Senior Principal Analyst at Gartner.



North American PCB Industry Shipments Down 24.1 Percent in September

IPC announced the September 2024 findings from its North American Printed Circuit Board (PCB) Statistical Program. The book-to-bill ratio stands at 1.08.

Total North American PCB shipments in September 2024 were down 24.1 percent compared to the same month last year. Compared to the preceding month, September shipments were down 23.8 percent.

PCB bookings in September were down 4.4 percent compared to the same month last year. September bookings were down 2.8 percent compared to the preceding month.

Global Smartphone Shipments to See Six-year CAGR of 3.6% From 2024-2029

DIGITIMES Research, by synthesizing supply chain information, regional market conditions, and analyzing global political and economic trends, forecasts that global smartphone shipments will reach 1,181.4 million units in 2024, marking a growth of 4.9%. Looking ahead over the next five years, there is an anticipated demand for feature phone users in regions such as India, Southeast Asia, Latin America, and Africa to upgrade to smartphones, while the ongoing deployment and expansion of 5G networks in these markets are expected to further drive their smartphone shipments. DIGITIMES Research estimates that the global annual shipment growth rate will range between 3% and 4%, with a compound annual growth rate (CAGR) of 3.6%.

Worldwide Tablet Shipments Increase by 20.4% in Q3 2024

Worldwide tablet shipments grew 20.4% in the third quarter of 2024 (3Q24), totaling 39.6 million units, according to preliminary data from the International Data Corporation (IDC) Worldwide Quarterly Personal Computing Device Tracker. The dismal 2023 market makes for easy year-over-year comparisons, but optimism is growing on the supply side of the industry which is a win overall. A handful of device refreshes occurred during the recent quarters, and active channel filings were undertaken in preparation for major promotional events and the holiday season. Not surprising to anyone, AI is becoming increasingly integrated into the tablet market, but outside of the Surface led Windows detachable Copilot+ marketing, the remainder is early days at best. Regardless, these innovations bring a wave of much needed optimism in the tablet market, piquing consumer interest, and potentially higher ASPs.

IDC: India's Smartphone Market Grew 6% YoY in 3Q24, Shipping 46 million Units

According to the International Data Corporation 's (IDC) Worldwide Quarterly Mobile Phone Tracker, the Indian smartphone market grew for the fifth consecutive quarter. In 3Q24, smartphone shipments in India reached 46 million units, reflecting 5.6% growth YoY (year-over-year). Apple posted its largest-ever quarterly shipment in India, with 4 million units.

Hon Hai posts Best Q3 Profit in Company History

Hon Hai Precision Industry Co posted the best third-quarter profit in the company's history, backed by stronger-than-expected demand for artificial intelligence (AI) servers and smartphones.

Net profit expanded 14 percent annually to NT\$49.33 billion (US\$1.52 billion) from NT\$43.13 billion in the third quarter last year, the company said. On a quarterly basis, net profit soared 41 percent from NT\$35.05 billion.

The company said gross profit expanded 12 percent annually and 15 percent sequentially to NT\$114.73 billion last quarter, the best for the period on record.



However, gross margin fell to 6.19 percent last quarter, from 6.66 percent a year earlier and 6.42 percent in the previous quarter, which the company attributed to higher shipments of AI servers, which have lower gross margin.

The growth momentum in AI servers is to extend into next year, boosting AI server revenue to account for half of the total server revenue compared with 40 percent this year, Hon Hai chairman Young Liu told investors.

Global Notebook Shipments Rise in 3Q24 Before Decline in 4Q24

In the third quarter of 2024, global notebook shipments (excluding detachable models) exceeded expectations, showing a 5.8% growth compared to the previous quarter, but the volumes are expected to slip in the fourth quarter, according to DIGITIMES Research's latest report covering the notebook industry in the second half of 2024.

Driven by trends in gaming, Al notebooks, and the new MacBooks, the overall consumer sector continued to exhibit a noticeable peak season effect in the third quarter. However, the enterprise sector has yet to show signs of improvement.

Looking ahead to the fourth quarter, due to the relatively uncertain global political and economic situation, coupled with the already high base in the third quarter, major brands are adopting a more conservative approach over their shipments. As a result, global notebook shipments in the fourth quarter are likely to decline by 3%.

It is estimated that global notebook shipments will reach 175 million units in 2024, representing a 5.4% growth compared to 2023. After two consecutive years of decline, the notebook market is set to return to a growth trajectory, the notebook report's figures show.

Huawei and Xiaomi Claim Over Half of China's Al Smartphone Market

As AI smartphones reach a critical juncture, major manufacturers are ramping up their hardware and AI application development. Industry watchers expect competition to intensify when Apple's Apple Intelligence becomes available in China.

According to reports from ITSB and Sina Finance, Huawei and Xiaomi have captured over half of China's Al smartphone market share, holding 34.8% and 26.9% respectively. Vivo, Honor, Oppo, and Samsung Electronics divide the remaining market share.

Foxconn Partners With Nvidia Omniverse to Develop Al-Driven Factories

Foxconn, collaborating with Nvidia, is leveraging digital twin technology to revolutionize manufacturing and supply chain management. The initiative uses Nvidia's Omniverse to streamline global factory operations, enhance resilience, and ensure consistent quality.

According to a press release on November 18, Foxconn announced a collaboration with Nvidia to develop digital twins aimed at transforming manufacturing processes and supply chain management. The partnership is expected to facilitate the global deployment of advanced facilities and enhance corporate resilience, opening new opportunities for innovation in these domains.

This collaboration was first unveiled during Hon Hai Tech Day 2023 (HHTD23), where Foxconn showcased its use of Nvidia's Omniverse platform to create a 3D digital twin for simulating automated production lines at



its Hsinchu factory in Taiwan. Plans are underway to expand the application of Omniverse to other Foxconn factories worldwide.

Concurrently, progress at the company's Mexico facility highlights the integration of Nvidia Omniverse, Nvidia Isaac for robotics, Nvidia Modulus for Al-driven simulations, and OpenUSD for seamless data interoperability.

The adoption of digital twin technology enables Foxconn to scale operations quickly by virtually simulating processes before physical implementation. This capability supports the company's strategy for global deployment, allowing it to replicate and standardize production lines across various regions with exceptional efficiency. By ensuring consistent quality and precision, Foxconn strengthens its competitiveness in strategic global markets.

Gartner Forecasts Worldwide Public Cloud End-User Spending to Total \$723 Billion in 2025

Worldwide end-user spending on public cloud services is forecast to total \$723.4 billion in 2025, up from \$595.7 billion in 2024, according to the latest forecast from Gartner, Inc.

Gartner analysts are exploring cloud spending priorities for infrastructure and operations (I&O) leaders during Gartner IT Infrastructure, Operations & Cloud Strategies Conference, taking place here through tomorrow. Gartner predicts that 90% of organizations will adopt a hybrid cloud approach through 2027, and the most urgent GenAI challenge necessary to address over the next year will be data synchronization across the hybrid cloud environment. Overall, all segments of the cloud market are expected to record a double-digit growth rate in 2025 highlighting how I&O leaders are pressured to effectively integrate I&O into their GenAI strategies and prepare for running AI and GenAI infrastructure at the edge

Nvidia Becomes the World's Most Valuable Company, Surpassing Apple and Microsoft

Nvidia briefly overtook Apple as the world's most valuable company late last month, but this week it solidified that position for the second time in a more definitive way. The GPU maker's meteoric rise and the dethronement of Intel on the Dow Jones index signifies a major shift toward AI in the tech sector. However, uncertainty still surrounds the new technology.

Since generative AI began gaining popularity, companies worldwide have scrambled to acquire GPUs for AI models, with Nvidia's products being the most sought after by far. This trend has increased the company's market cap by 218 percent over the past year and more than 3,000 percent in the last five years.

With Nvidia firmly positioned at the top of the tech world alongside giants like Apple, Microsoft, Amazon, and Google, its position relative to former chip leader Intel is another sign of generative Al's impact. Chipzilla has faced multiple serious problems recently, leading to thousands of layoffs, buyout talks, and likely the company's first annual net loss in almost four decades.

Many observers believe that missing the AI boom was one of Intel's key missteps. Another stark indicator of the companies' divergence is Nvidia CEO Jensen Huang's \$104 billion net worth, which briefly surpassed Intel's entire market cap last month, although Intel has since rebounded to \$107 billion.

Gartner Predicts Power Shortages Will Restrict 40% of Al Data Centers by 2027

Al and generative Al (GenAl) are driving rapid increases in electricity consumption, with data center forecasts over the next two years reaching as high as 160% growth, according to Gartner, Inc. As a result, Gartner predicts 40% of existing Al data centers will be operationally constrained by power availability by 2027.



"The explosive growth of new hyperscale data centers to implement GenAl is creating an insatiable demand for power that will exceed the ability of utility providers to expand their capacity fast enough," said Bob Johnson, VP Analyst at Gartner. "In turn, this threatens to disrupt energy availability and lead to shortages, which will limit the growth of new data centers for GenAl and other uses from 2026."

Gartner estimates the power required for data centers to run incremental Al-optimized servers will reach 500 terawatt-hours (TWh) per year in 2027, which is 2.6 times the level in 2023.

Hon Hai Sales Growth Dips

Apple Inc's major manufacturing partner Hon Hai Precision Industry Co reported its slowest monthly sales growth since February, stoking concerns about demand momentum for artificial intelligence (AI) infrastructure and iPhones. Hon Hai, also a key server assembly partner to Nvidia Corp, yesterday reported sales of NT\$804.85 billion (US\$25.18 billion) for last month, up 8.59 percent year-on-year and marking the highest October level in the company's history.

Analysts expect the company to grow its sales by 15 percent to NT\$2.13 trillion this quarter. Hon Hai's revenue in the first 10 months of this year was NT\$5.53 trillion, up 9.57 percent year-on-year and the highest for the period on record, company data showed.

Apple Ships US\$6 billion of iPhones from India

Apple Inc's iPhone exports from India soared by one-third in the six months through last month, underscoring its push to expand manufacturing in the country and reduce dependence on China. The US company exported nearly US\$6 billion of India-made iPhones, a one-third increase in value terms from a year earlier, people familiar with the matter said. The dollar figure refers to the devices' estimated factory gate value, not the retail price.

iPhone account for the bulk of India's smartphone exports and helped the product category become the top export to the US at US\$2.88 billion in the first five months of this fiscal year, government data showed.

Five years ago, before Apple expanded manufacturing in India, the country's annual smartphone exports to the US were a meager US\$5.2 million.

EU Hits China EV Manufacturers with Tariffs Ranging From 17 to 35.3 Percent

The EU has imposed duties on imports of electric vehicles (EVs) from China starting yesterday after talks between Brussels and Beijing failed to find an amicable solution to their trade dispute. EVs have become a major flashpoint in a broader trade dispute over the influence of Chinese government subsidies on European markets and Beijing's burgeoning exports of green technology to the bloc. The duties would stay in force for five years, unless an amicable solution is found.

According to the commission, which manages trade disputes on behalf of the 27 EU member countries, sales of Chinese-built electric cars jumped from 3.9 percent of the EV market in 2020 to 25 percent by September last year, in part by unfairly undercutting EU industry prices. The duties on Chinese manufacturers would be 17 percent on cars made by BYD Co 18.8 percent on those from Geely Holding Group Co and 35.3 percent for vehicles exported by China's state-owned SAIC Motor Corp. Geely has brands including Polestar and Sweden's Volvo, while SAIC owns Britain's MG, one of Europe's best-selling EV brands. Other EV manufacturers in China, including Western companies such as Volkswagen AG and BMW AG, would be



subject to duties of 20.7 percent. The commission has an "individually calculated" rate for Tesla Inc of 7.8 percent.

The Chinese Ministry of Commerce objected to the measures as protectionist and unfair. The rapid growth in China's market share has sparked concern in the EU that Chinese cars would eventually threaten the EU's ability to produce its own green technology to combat climate change. Business groups and unions also fear that the jobs of 2.5 million auto industry workers could be put in jeopardy, as well as those of 10.3 million more people whose employment depends indirectly on EV production.

China's Manufacturing Activity Expands for the First Time in Six months

China's manufacturing activity expanded for the first time in six months and services picked up in October, indicating that Beijing's latest stimulus measures are helping the battered economy turn a corner. The National Bureau of Statistics purchasing managers' index (PMI) on Thursday rose to 50.1 from 49.8 in September, just above the 50-mark separating growth from contraction and beating a median forecast of 49.9 in a Reuters poll.

In a further encouraging sign, the non-manufacturing PMI, which includes construction and services, rose to 50.2 this month, after it dropped to 50.0 in September. Policymakers are banking that a last-ditch stimulus effort announced in late September will pull economic growth back towards this year's roughly 5% target and kick lending and investment back into gear, as a sharp property market downturn and frail consumer confidence continue to deter investors.

Apple Sales Rise 6%, Company Seeing Early iPhone 16 Demand

Overall iPhone revenue grew 6%, in the first sign of how the iPhone 16 is faring in the market. Apple's newest devices came out Sept. 20, giving Apple about a week of new product sales in the quarter. It's still Apple's most important product, accounting for nearly 49% of the company's overall sales.

Sales of the iPhone 15 were "stronger than 14 in the year-ago quarter, and 16 was stronger than 15," Apple CEO Tim Cook told CNBC's Steve Kovach. Cook said the company was looking forward to Apple Intelligence, the AI system for iPhones and Macs that started to roll out this week as part of the iOS 18.1 update. "We're getting great feedback from customers and developers already and a really early stat, which is only three days' worth of data: Users are adopting iOS 18.1 at twice the rate that they adopted 17.1 in the year-ago quarter," Cook said.

Apple said on a call with analysts that it expects "low to mid-single digit" sales growth during the December quarter. It also signaled that it expects services growth to be about the same as its growth rate for the past year, which was 12.87%.

Apple reported \$14.73 billion, or 97 cents per share, in net income during the quarter, versus \$22.96 billion, or \$1.47 per share, in the year-ago period. Apple's adjusted earnings per share, after removing the one-time tax charge, increased 12% on an annual basis.

Revenue rose about 2% for the full fiscal year to \$391.04 billion. Revenue in the September period was up 6%. The company's cash pile now stands at \$156.65 billion.

During the quarter, Apple paid a one-time income tax charge of \$10.2 billion to resolve a long-running case dating back to 2016 over how the company handled taxes in Ireland.



Microsoft Introduces PC That Has One Job: connect users to their computers in the cloud

Microsoft is previewing a new PC that's designed to connect corporate workers to their programs and files in the cloud. The Windows 365 Cloud Link is available in limited use in the U.S., Canada and a handful of other countries. It will be for sale in a few markets at \$349 in April.

After years spent failing to crack the list of top PC manufacturers with its Surface product line, Microsoft is trying something new in an established category of hardware. In the second quarter, Microsoft said its \$1.2 billion in devices revenue was down about 11%, while total PC shipments increased about 2%, according to one estimate.

The device is meant to be simple and secure. It runs a stripped-down operating system called Windows CPC, with no local applications or local users, and has a strict application control policy that can't be disabled. It automatically downloads updates in the background and installs them at night.

An Intel chip runs inside the computer, which comes with 8GB of RAM and 64GB of storage. Weighing less than a pound, the puck-like package can be kept on a desk or even mounted behind a PC monitor.

The release comes three years after Microsoft introduced Windows 365, which gives employees access to their custom virtual desktops on any device. Desktop virtualization, including an earlier Microsoft product called Azure Virtual Desktop, took off after the start of the Covid pandemic in 2020, with workers stuck at home.

In July 2023, Microsoft CEO Satya Nadella said Azure Virtual Desktop and Windows 365 together generated \$1 billion in revenue for the first time in the 2024 fiscal year.

New Integration Lets Windows Manage Android Files Wirelessly

Microsoft has started rolling out a new feature that allows Windows users to access their Android phone's storage directly via File Explorer. The company informed Windows Latest that this integration began in October and is now available for both Windows 10 and Windows 11 users. Known as Android in File Explorer, the feature is part of the broader Manage Mobile Devices functionality and is managed by the Cross-Device Experience Host component, which is updated through the Microsoft Store.

With this integration, users can wirelessly browse, manage, and transfer files from their Android devices directly within the Windows File Explorer interface – no USB connection required.

To use the feature, devices must meet certain requirements. It is compatible with Android 11 or later, and users need version 1.24071 or newer of the Link to Windows app on their Android device. Additionally, the latest updates must be installed for either Windows 11 or Windows 10, and the Cross-Device Experience Host component should be up to date.

Once installed, users will see their Android phone appear as a shortcut in the File Explorer sidebar. Clicking this shortcut opens the phone's internal storage, allowing users to browse folders and files just as they would with a USB-connected device.

Users can rename, copy, move, and delete files on their Android device directly from their Windows PC. Deleted files are moved to a new Recycle Bin folder on the Android device, where they remain for 30 days before being automatically deleted.

The rollout is staged, so not all users may see the feature immediately.



Big Tech Doubles Down on AI, \$200 Billion Gamble Raises Concerns on Wall Street

Tech giants are set to spend a staggering \$200 billion on AI-related capital expenditures this year, according to Bloomberg's calculations, marking an all-time high for these companies. It is an unprecedented level of investment, ranging from securing scarce high-end chips and constructing expansive data centers to forging deals with energy providers and even reviving a controversial nuclear plant for power.

Amazon is leading the charge with a projected record \$75 billion in spending for 2024, as CEO Andy Jassy describes AI as a "once-in-a-lifetime opportunity." Analysts at MoffettNathanson called the sum "truly staggering."

Meta is not far behind, with capital spending potentially reaching up to \$40 billion in 2024, while CEO Mark Zuckerberg commits to increased investment in Al language models and futuristic projects.

Alphabet has reported higher-than-expected capital expenditures and is projecting "substantial" increases in spending for 2025.

Microsoft's Al-related expenses are also soaring, having spent \$14.9 billion in a single quarter, a 50 percent increase from the previous year. Meanwhile, it faces challenges in meeting demand due to data center capacity constraints.

Apple, while not as aggressive in its AI spending, has introduced "Apple Intelligence," a suite of AI-enhanced services, though these new AI products have not significantly impacted its financial results.

Wall Street's response was mixed as the tech giants reported varied financial results this quarter. Amazon and Alphabet saw their shares soar after beating earnings expectations, largely due to strong growth in their cloud-computing divisions. However, Meta and Microsoft experienced stock declines following concerns about spending plans and cloud revenue growth projections.

Google May be About to Reboot its Laptop and Tablet Hardware Again

In June, Google announced that ChromeOS "will soon be developed on large portions of the Android stack" to make the engineering process easier and bring AI features to ChromeOS faster. Google also merged its Android and hardware teams, began testing desktop windowing for Android tablets, and is reportedly working to add extensions to the Android version of Chrome.

Additionally, a source told *Android Authority* that Google plans to ship Chromebooks running Android at some point. This desktop-friendly version of Android may also appear on the premium Pixel Laptop that Google is rumored to be working on. This year, Google has made several improvements to Android's keyboard support, adding a physical keyboard toolbar and new accessibility features. It's also reportedly working on a way to move your cursor without a mouse.

Google's approach to Android has evolved significantly since it started bringing Android apps to Chrome OS in 2016. With many changes making Android better for large screens, the mobile operating system is gradually becoming more suitable for desktop use, too.



US Government Calls for Breakup of Google and Chrome

Alphabet Inc's Google must sell its Chrome browser, share data and search results with rivals, and take other measures — including possibly selling Android — to end its monopoly on online search, prosecutors argued in a US court.

Such changes could result in Google being regulated for as many as 10 years via a committee appointed by the Washington federal court that ruled it held an illegal monopoly in search and related advertising in the US. The measures presented by the US Department of Justice (DOJ) are part of a landmark case which has the potential to reshape how users find information. In the US, Google processes 90 percent of searches.

"Google's unlawful behavior has deprived rivals not only of critical distribution channels but also distribution partners who could otherwise enable entry into these markets by competitors in new and innovative ways," the DOJ and state antitrust enforcers said in a court filing on Wednesday.

Their proposals include ending exclusive agreements in which Google pays billions of dollars annually to Apple Inc and other device vendors to make its search engine the default on their tablets and smartphones.

The filing expands on an earlier outline on how the government wants to end Google's monopoly in the US. Google called the proposals radical at the time, saying they would harm US consumers and businesses and shake US competitiveness in artificial intelligence.

US District Judge Amit Mehta has scheduled a trial on the proposals for April, though US president-elect Donald Trump and the DOJ's next antitrust head could step in and change course in the case.

The proposals are wide-ranging, including barring Google from re-entering the browser market for five years and insisting Google sell its Android mobile operating system if other remedies fail to restore competition. The DOJ has also requested a prohibition on Google buying or investing in search rivals, query-based artificial intelligence products or advertising technology.



Bishop & Associates has just released a new ten-chapter research report providing a comprehensive analysis of the world's Top 100 Electronic Connector Manufacturers. This new report furnishes detailed statistics that benchmark the leading connector manufacturers by 2022/2023 total sales, sales by end-use equipment market, sales by product category, and sales by region. All manufacturers are exhibited by 2023 sales and are ranked by region of the world with percent year-to-year change. This report provides all the key data needed to analyze the sales performance of each of the top 100 worldwide electronic connector suppliers.

The world's top 100 connector manufacturers recorded 2023 shipments of \$67.465 billion. This represented 82.4% of the worldwide connector market, down from 83.3% in 2022. The balance of the connector industry had 2023 shipments of \$14.389 billion and represented 17.6% of the total market.

Over the last decade, we have identified more than 750 connector manufacturers, many of which have been acquired by larger companies or consolidated to form new connector companies. In fact, if you were to review the list of top 100 connector companies in 2000 with the list of the top 100 connector companies in 2023, you would see that approximately 49% of the companies listed in 2000 were acquired by other companies. In fact, in just the last several years, names like ERNI, Positronic, Genesis Connector Technology, and Winchester, all at one time top 100 place holders have been acquired. And it doesn't appear this consolidation will end. Already two companies on the 2023 top 100 connector manufacturer's list, Carlisle Interconnect (#24) and CommScope (#26) will not return in 2024, as they too have been acquired.

These changes are allowing new companies to appear on Bishop's list of top 100 connector manufacturers. Companies like Qnnect, a portfolio company comprised of connector manufacturers such as Cristek, Fil-Con, Connectronics, and Meritec/Joy Signal, are now listed as the 28th largest connector manufacturer. In addition to this, many connector companies offer highly focused product offerings, or support niche markets or specific regions. We continue to discover additional connector companies, especially in China and other developing countries, as well as non-connector companies who are expanding their current product offering to include interconnect, or who are developing application specific connectors to support their other products.

The table below shows a sample table for percent of sales for the top 100 connector manufacturers, and all other connector manufacturers by geographic region.

Top 100 by Geographic Region - 2023 Sales

	1 - 100	All Other	Total
Region	Sales	Sales	World
North America	XX.X%	X.X%	XX.X%
Europe	XX.X%	X.X%	XX.X%
Japan	X.X%	X.X%	X.X%
China	XX.X%	X.X%	XX.X%
Asia Pacific	XX.X%	X.X%	XX.X%
ROW	X.X%	X.X%	X.X%
Total World	82.4%	17.6%	100.0%

\$ Millions

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Top 100 Connector Manufacturers – Percent Market Share by Region

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