The Bishop Report
Performance and Forecast of the World Connector Industry

Issue No. 373 | 4th Quarter 2023 | November 2023

Orders up in October
Ending 12 Consecutive Down Months

Regional Performance:
European sales up +4.1%. North America up +0.1%. All other regions decline. See page 5.

2023 Outlook:
Bishop is forecasting 2023 sales to be $81.6 billion, down -3.0%.

Industry Backlog:
October's backlog was $21,224 million (13.3 weeks).

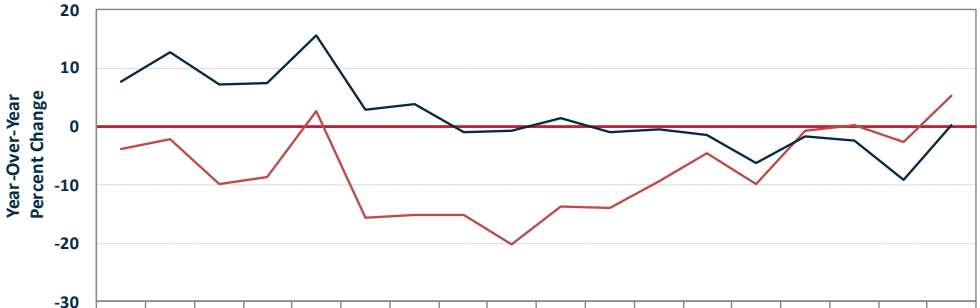
2023 Currency Impact:
The industry registered a negative year-over-year decline in October, down -3.8% YTD in local currencies.

NEW BISHOP RESEARCH REPORT

Connector Types and Technologies Poised for Growth

October bookings were up +5.2% YOY. Billings were up +0.3% YOY. The backlog in October declined slightly to $21,224 million or 13.3 weeks.

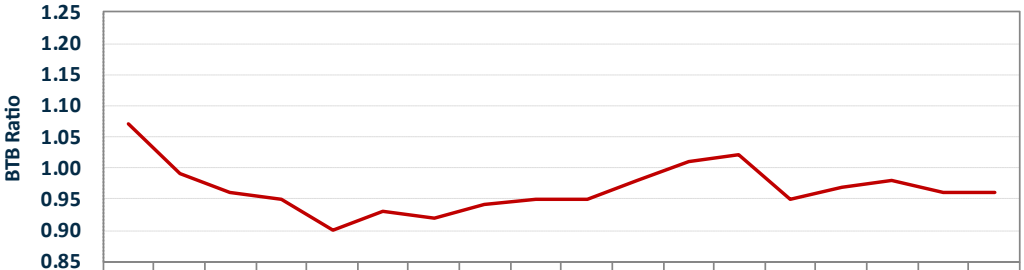
Bookings and Billings YOY Change



	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	-3.9	-2.1	-9.9	-8.8	2.6	-15.6	-15.2	-15.1	-20.1	-13.8	-14.0	-9.3	-4.6	-9.8	-0.8	0.2	-2.8	5.2
Billings	7.7	12.7	7.1	7.3	15.5	2.8	3.9	-0.9	-0.8	1.40	-0.9	-0.6	-1.4	-6.2	-1.7	-2.5	-9.2	0.3

The book-to-bill ratio in September and YTD was 0.96.

Connector Industry Book-to-Bill

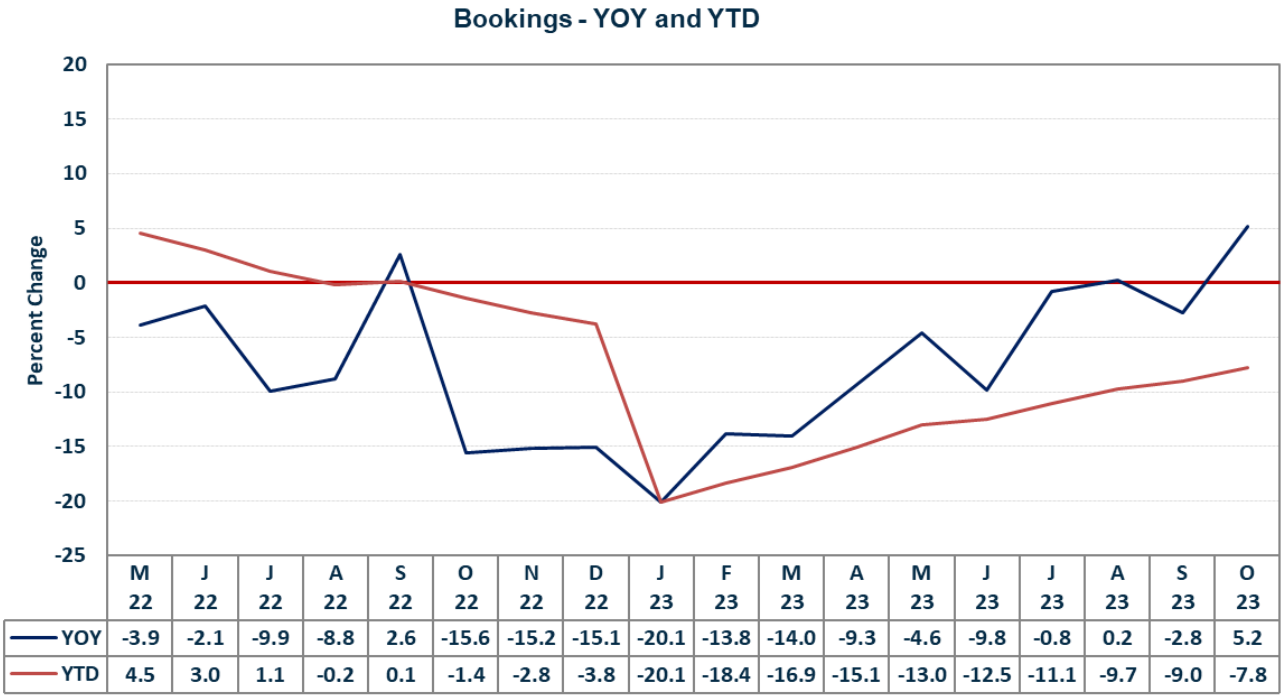


	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
BtB	1.07	0.99	0.96	0.95	0.90	0.93	0.92	0.94	0.95	0.95	0.98	1.01	1.02	0.95	0.97	0.98	0.96	0.96

Booking Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Bookings Percentage Change – 2021/2022/2023

	Sequential			Year-Over-Year			Year-To-Date		
Month	2021	2022	2023	2021	2022	2023	2021	2022	2023
Jan	2.3%	2.6%	-3.2%	24.7%	15.9%	-20.1%	24.7%	15.9%	-20.1%
Feb	17.7%	10.4%	14.4%	38.9%	8.7%	-13.8%	32.0%	12.0%	-18.4%
Mar	-3.5%	-5.3%	-1.8%	34.5%	7.1%	-14.0%	32.8%	10.3%	-16.9%
Apr	3.2%	-8.5%	-3.5%	81.9%	-5.5%	-9.3%	42.9%	6.2%	-15.1%
May	5.1%	7.0%	12.1%	86.4%	-3.9%	-4.6%	50.5%	4.5%	-13.0%
Jun	-8.3%	-6.7%	-11.6%	59.7%	-2.1%	-9.8%	51.9%	3.0%	-12.5%
Jul	-1.9%	-9.6%	-0.6%	36.4%	-9.9%	-0.8%	49.6%	1.1%	-11.1%
Aug	6.6%	8.0%	9.3%	32.5%	-8.8%	0.2%	47.1%	-0.2%	-9.7%
Sep	-11.9%	-1.0%	-4.1%	19.1%	2.6%	-2.8%	43.7%	0.1%	-9.0%
Oct	6.8%	-12.1%	-4.7%	22.1%	-15.6%	5.2%	41.2%	-1.4%	-7.8%
Nov	9.3%	9.8%		15.3%	-15.2%		38.2%	-2.8%	
Dec	-7.0%	-6.8%		15.5%	-15.1%		36.0%	-3.8%	



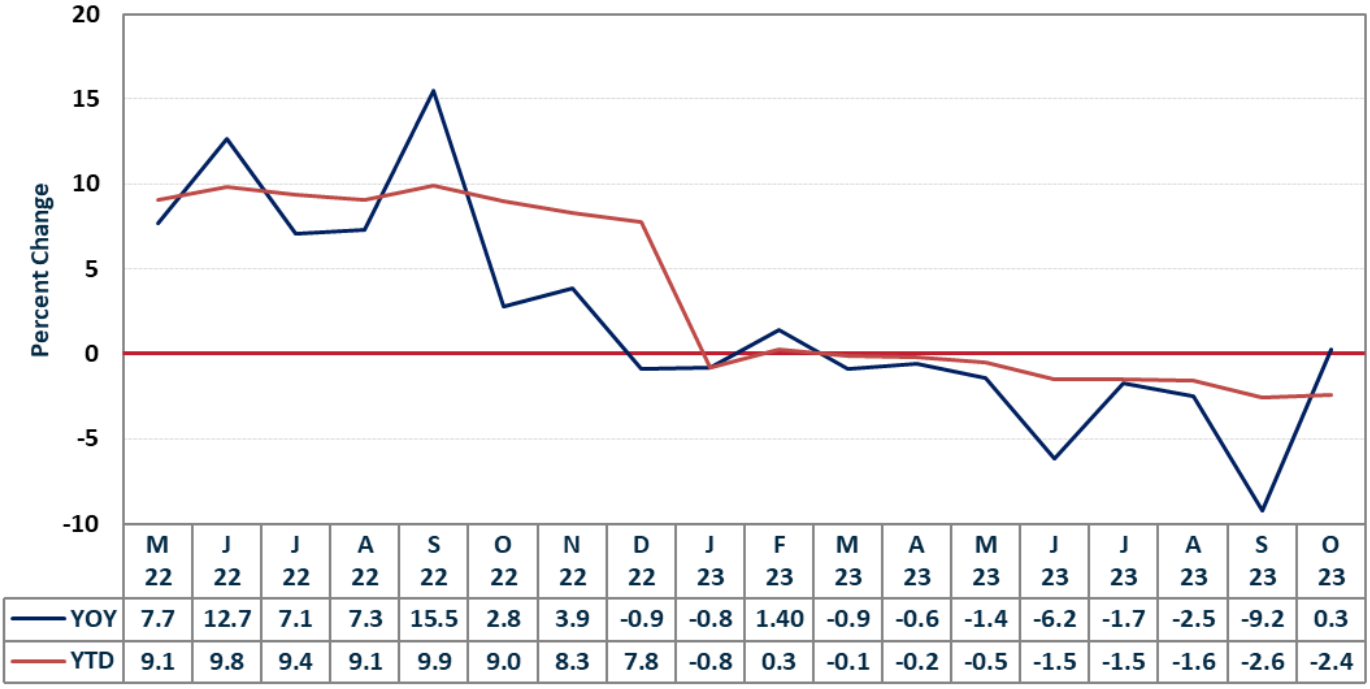
- October bookings rose +5.2% YOY. YTD sales saw a -7.8% decline.
- Orders declined -4.7% sequentially.
- The October book-to-bill ratio was 0.96.

Billing Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Billings Percentage Change – 2021/2022/2023

	Sequential			Year-Over-Year			Year-To-Date		
Month	2021	2022	2023	2021	2022	2023	2021	2022	2023
Jan	-1.6%	-4.3%	-4.4%	19.0%	12.4%	-0.8%	19.0%	12.4%	-0.8%
Feb	12.6%	11.4%	13.9%	26.7%	11.2%	1.4%	22.9%	11.8%	0.3%
Mar	-1.1%	-2.0%	-4.4%	25.5%	10.2%	-0.9%	23.8%	11.2%	-0.1%
Apr	-1.2%	-6.6%	-6.3%	49.5%	4.1%	-0.6%	29.4%	9.4%	-0.2%
May	7.0%	10.7%	10.7%	47.1%	7.7%	-1.4%	32.8%	9.1%	-0.5%
Jun	-3.8%	0.7%	-4.7%	33.5%	12.7%	-6.2%	33.0%	9.8%	-1.5%
Jul	-2.0%	-7.1%	-2.5%	20.6%	7.1%	-1.7%	31.0%	9.4%	-1.5%
Aug	8.7%	8.9%	8.0%	21.5%	7.3%	-2.5%	29.7%	9.1%	-1.6%
Sep	-2.3%	5.1%	-2.1%	19.4%	15.5%	-9.2%	28.2%	9.9%	-2.6%
Oct	-3.4%	-14.0%	-5.0%	15.3%	2.8%	0.3%	26.8%	9.1%	-2.4%
Nov	9.4%	10.6%		12.8%	3.9%		25.2%	8.6%	
Dec	-5.6%	-10.0%		15.5%	-0.9%		24.3%	7.8%	

Billings - YOY and YTD



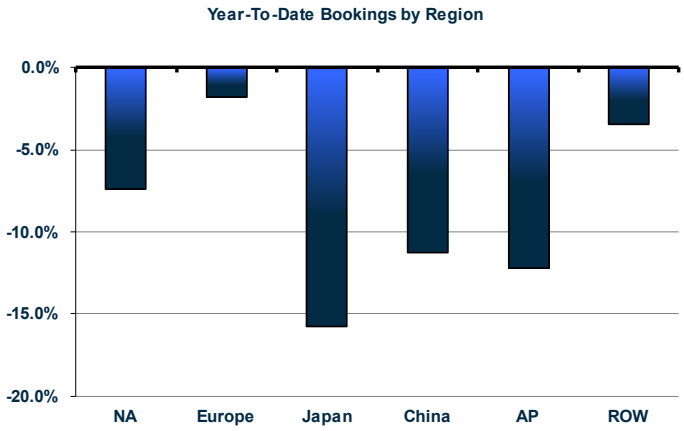
	M 22	J 22	J 22	A 22	S 22	O 22	N 22	D 22	J 23	F 23	M 23	A 23	M 23	J 23	J 23	A 23	S 23	O 23
YOY	7.7	12.7	7.1	7.3	15.5	2.8	3.9	-0.9	-0.8	1.40	-0.9	-0.6	-1.4	-6.2	-1.7	-2.5	-9.2	0.3
YTD	9.1	9.8	9.4	9.1	9.9	9.0	8.3	7.8	-0.8	0.3	-0.1	-0.2	-0.5	-1.5	-1.5	-1.6	-2.6	-2.4

- October billings rose slightly +0.3% YOY but are -2.4% YTD.
- Sequentially, October billings dropped -5.0%.

Regional Performance: BOOKINGS

October 2023 Bookings

Region	Sequential	YOY	YTD
NA	-8.3%	3.8%	-7.4%
Europe	-5.3%	5.2%	-1.8%
Japan	-5.3%	-9.5%	-15.7%
China	-3.9%	8.0%	-11.3%
AP	1.5%	6.5%	-12.2%
ROW	4.2%	18.4%	-3.4%
Total	-4.7%	5.2%	-7.8%

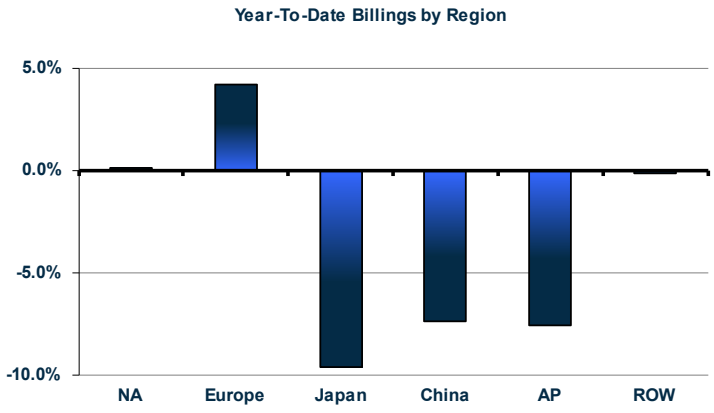


- October bookings rose +5.2% YOY.
- YOY orders increased in all regions expect Japan which declined -9.5%.
- All regions have negative YTD results.
- ROW achieved the largest YOY growth in October rising +18.4%.
- AP and ROW were the only regions to witness sequential improvement.
- The book-to-bill ratio was 0.96.

Regional Performance: BILLINGS

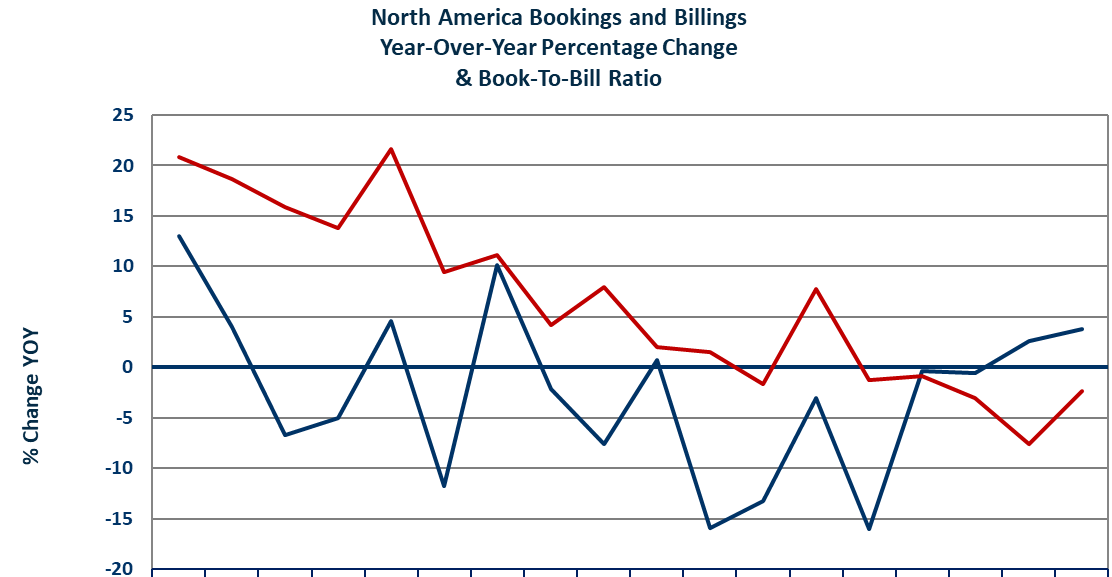
October 2023 Billings

Region	Sequential	YOY	YTD
NA	-9.0%	-2.3%	0.1%
Europe	-11.4%	9.3%	4.1%
Japan	-2.1%	-8.0%	-9.7%
China	5.6%	-1.4%	-7.4%
AP	-3.6%	-4.2%	-7.6%
ROW	-2.4%	-1.0%	-0.1%
Total	-5.0%	0.3%	-2.4%



- October connector sales rose slightly by +0.3% YOY.
- All regions declined sequentially except China which rose +5.6%.
- All regions contracted YOY except Europe.
- YTD, North America and Europe remain positive.

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.

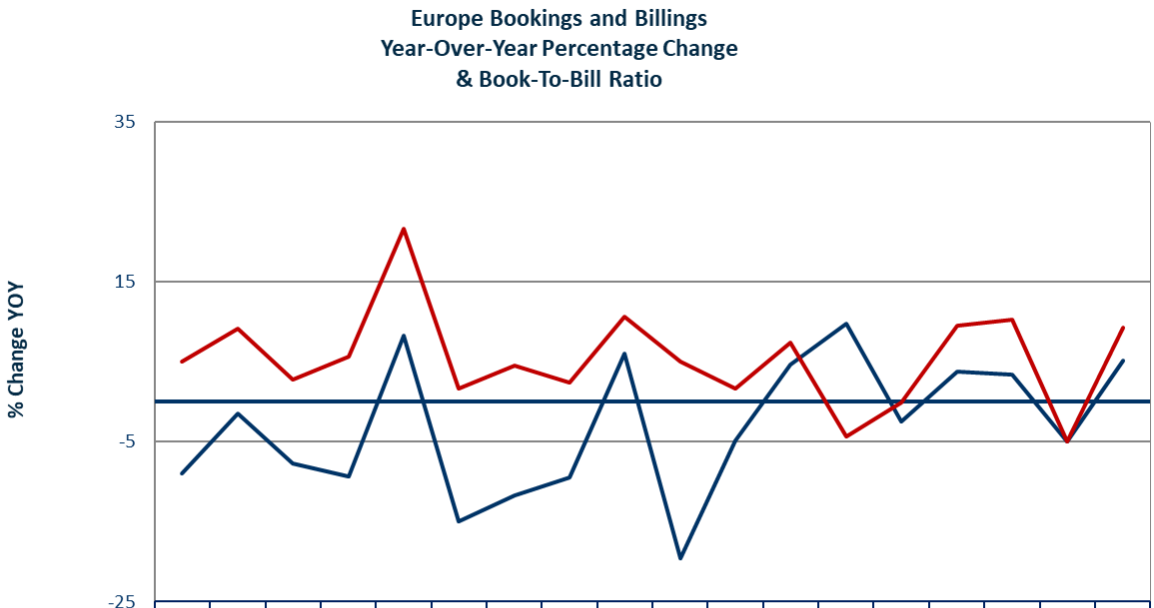


	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	13.0	4.0	-6.7	-5.0	4.6	-11.8	10.1	-2.2	-7.6	0.7	-15.9	-13.2	-3.0	-16.0	-0.4	-0.6	2.6	3.8
Billings	20.8	18.6	15.9	13.8	21.6	9.4	11.1	4.2	8.0	2.0	1.5	-1.7	7.8	-1.3	-0.9	-3.0	-7.6	-2.3
Billing SEQ	14.5	-6.6	-3.9	12.7	1.2	-13.9	9.4	-8.0	-3.6	12.4	-5.1	-5.9	24.9	-14.1	-3.4	10.3	-3.7	-9.0
BTB	1.06	1.04	0.94	0.95	0.87	0.94	0.91	1.00	0.96	0.98	0.95	0.95	0.94	0.87	0.94	0.97	0.97	0.98

North America Performance

- In October, North America experienced a -2.3% decline in sales compared to the same period last year, while orders saw a +3.8% year-over-year increase. Sequentially, North American billings declined by -9.0%. The book-to-bill ratio was 0.98.
- The US inflation rate fell in October by 3.2%. Gas prices dropped 5% over that period.
- Industrial production declined 0.6% YOY in October. Manufacturing output fell 0.7% in October with much of the decline attributed to a 10% drop in motor vehicle output.
- Manufacturing PMI increased to 46.7 in October, 2.3% below the prior month.
- US unemployment was stable in September at 3.8%
- Retail sales were up 3.9% YOY in October, a slight 0.1% uptick over September.
- Housing starts increased to 1372 (‘000) units in October from 1346 units (restated) in September, a 1.9% increase sequentially, but 4.2% below the prior year.
- US new vehicle sales in October edged up 1.8% YOY.
- Consumer confidence declined modestly for the third straight month to 102.6 in October from 104.3 in September according to the Conference Board.

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.

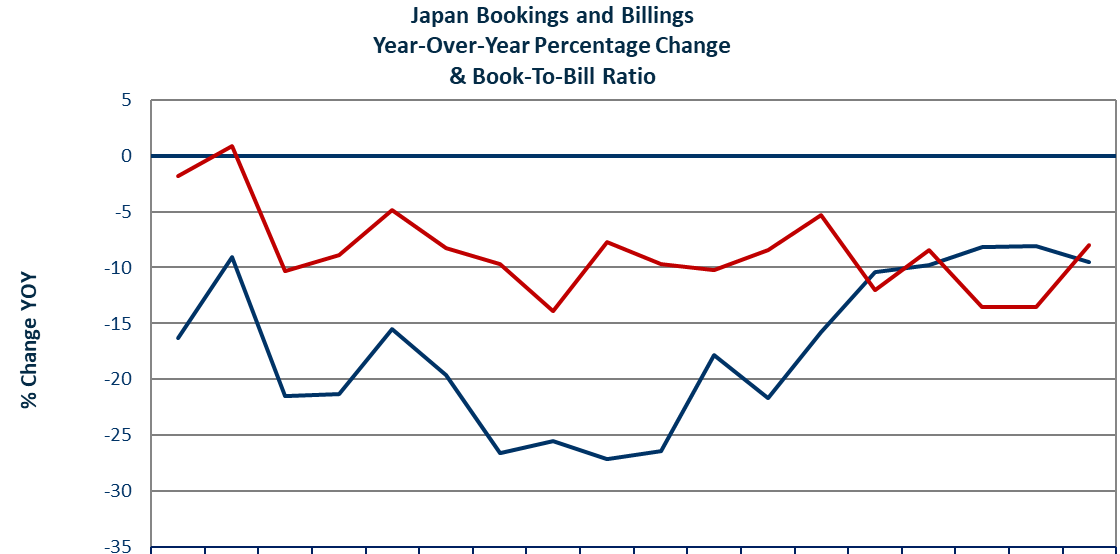


	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	-9.0	-1.5	-7.7	-9.3	8.3	-15.0	-11.7	-9.4	6.0	-19.6	-4.8	4.6	9.8	-2.5	3.8	3.4	-5.0	5.2
Billings	5.0	9.1	2.8	5.6	21.7	1.6	4.5	2.4	10.7	5.0	1.7	7.4	-4.4	-0.1	9.5	10.3	-5.0	9.3
Billing SEQ	15.9	-2.9	-11.3	11.9	13.1	-22.8	16.0	-10.9	5.6	14.5	-8.0	-5.1	3.1	1.5	-3.1	12.8	-2.3	-11.4
BTB	1.06	1.02	1.02	0.96	0.87	0.97	0.97	1.00	0.99	0.96	1.06	1.07	1.21	0.99	0.97	0.90	0.86	0.92

Europe Performance

- Year-over-year, bookings and billings increased, bookings +5.2% and billings +9.3%. The book-to-bill ratio ticked up to 0.92. Sequentially, sales experienced a -11.4% decline.
- Euro Area industrial production fell 6.9% YOY in September.
- The Eurozone Manufacturing PMI rose to 43.8 in November 2023 from 43.1 in October, marking the highest level in six months.
- The euro fell 6.9% against the US dollar in October.
- The euro area annual inflation rate was 2.9% in October 2023, down from 4.3% in September.
- The unemployment rate remained at 6.5% in September.
- Euro zone consumer confidence is -16.9 in October, a slight improvement over the -17.9 recorded in September.

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.

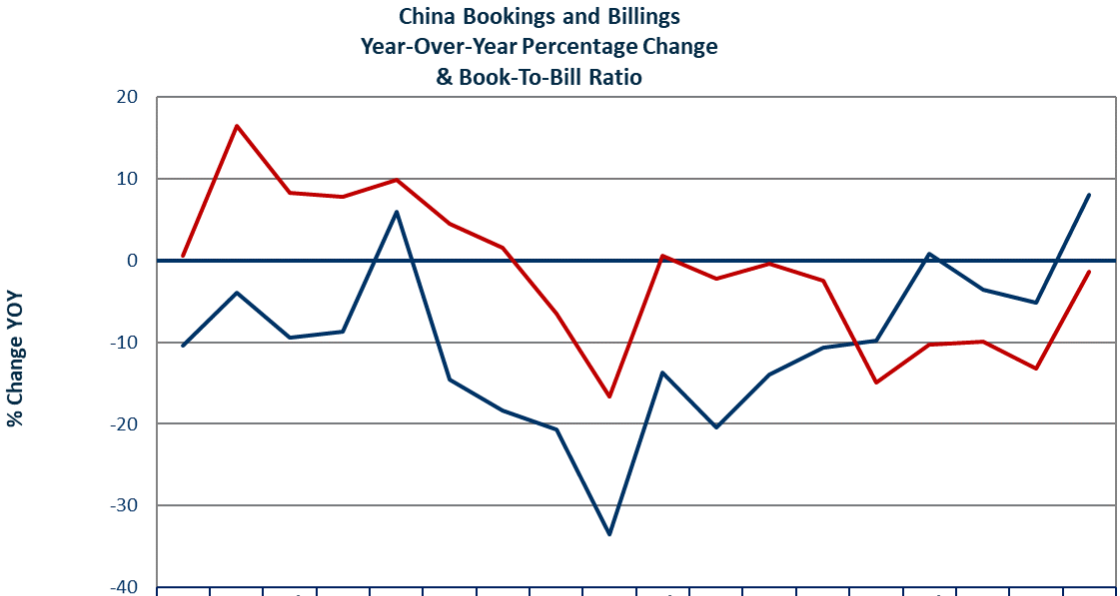


	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	-16.3	-9.1	-21.5	-21.3	-15.5	-19.6	-26.6	-25.5	-27.1	-26.4	-17.8	-21.7	-15.8	-10.4	-9.8	-8.2	-8.1	-9.5
Billings	-1.8	0.9	-10.3	-8.9	-4.9	-8.3	-9.7	-13.9	-7.7	-9.7	-10.2	-8.4	-5.3	-12.0	-8.4	-13.5	-13.5	-8.0
Billing SEQ	-0.2	4.9	-9.7	7.0	0.9	-7.2	8.1	-8.9	-4.7	12.6	-5.5	-2.5	2.7	-2.4	-6.1	1.0	1.0	-2.1
BTB	1.05	0.99	1.02	0.95	0.96	1.01	0.94	0.99	0.92	0.94	0.99	0.93	0.93	1.01	1.01	1.01	1.02	0.99

Japan Performance

- In October, year-over-year bookings decreased by -9.5%, while sales declined -8.0%. Sequentially sales declined -2.1%. Japan's book-to-bill ratio was 0.99.
- The inflation rate in October dropped to 3.3%.
- Industrial production in Japan fell by 4.37% in September. This is well below Japan's average, which from 1954 to September 2023 was 4.58%. Industrial production has declined YOY nine out of the last 12 months.
- Retail sales in Japan rose 5.8% year-on-year in September 2023, slowing from a 7% increase seen both in July and August and roughly in line with forecasts for a 5.9% gain.
- Exports from Japan rose by 1.6% YOY to JPY 9,147.07 billion in October 2023, expanding for the second straight month, beating market forecasts of 1.2% and remaining close to an all-time high of JPY 9,199 billion hit in September. Japan’s manufacturing PMI was revised upward to 48.7 in October from a flash figure and September’s 7-month low of 48.5.
- Japan's housing starts dropped by 6.8% year-over-year in September 2023, compared with market forecasts of a 4.7% decline and after a 9.4 % fall in the previous month. The consumer confidence index in Japan increased to 35.7 in October from September’s six-month low of 35.2.
- Japan’s unemployment rate fell to 2.6% in September 2023 from 2.7% in August.

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.

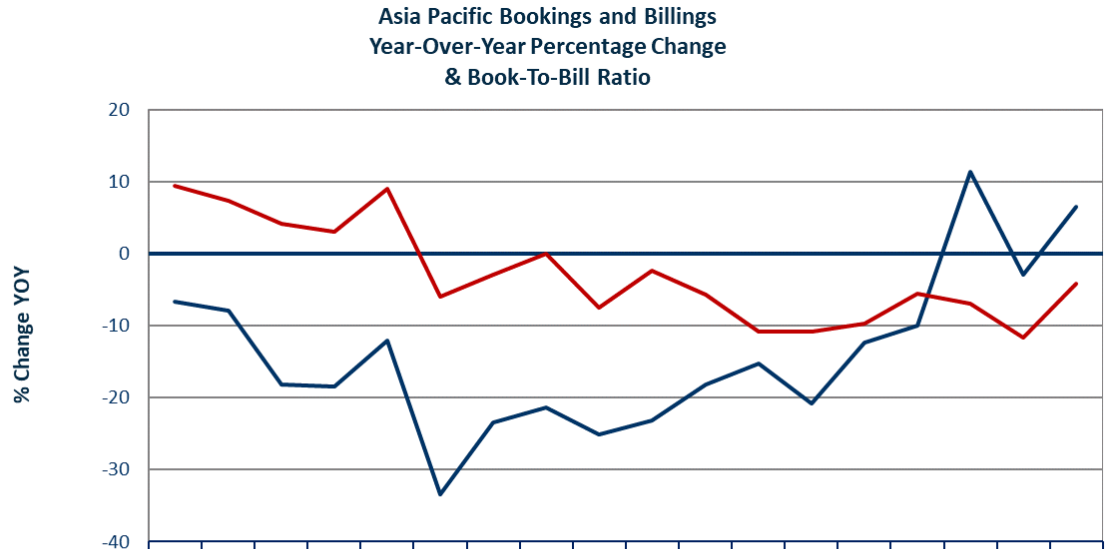


	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	-10.4	-4.0	-9.4	-8.7	6.0	-14.6	-18.4	-20.7	-33.5	-13.7	-20.5	-14.0	-10.7	-9.8	0.8	-3.6	-5.2	8.0
Billings	0.6	16.5	8.3	7.8	9.9	4.5	1.6	-6.5	-16.7	0.6	-2.2	-0.4	-2.5	-15.0	-10.3	-9.9	-13.2	-1.4
Billing SEQ	10.3	12.5	-6.6	5.2	2.9	-7.2	8.1	-12.7	-13.4	16.1	0.1	-9.5	7.5	-1.9	-1.3	5.7	-0.9	5.6
BTB	1.07	0.94	0.94	1.00	0.97	0.90	0.87	0.88	0.89	0.93	0.92	0.97	0.98	1.00	1.05	1.06	1.06	0.96

China Performance

- China's sales decreased -1.4% while orders grew +8.0%, YOY. The BTB was 0.96. Sequentially, sales climbed +5.6% in October.
- Industrial production was up 4.6% YOY in October.
- China's manufacturing PMI fell to 49.5 in October versus 50.2 in September.
- China's retail sales climbed by 11.2% year-over-year in October 2023, accelerating by 1.1% from the prior month.
- Exports from China fell 6.4% over the year-over-year.
- China's vehicle sales surged by 14% year-on-year in October 2023, marking the third consecutive month of growth, helped by significant new model launches in recent months as well as aggressive promotional campaigns and deep discounting by vehicle manufacturers.
- Inflation in October declined by 0.2% over the same month the last year.
- China's surveyed urban unemployment rate remained at 5.0% in October 2023.

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.



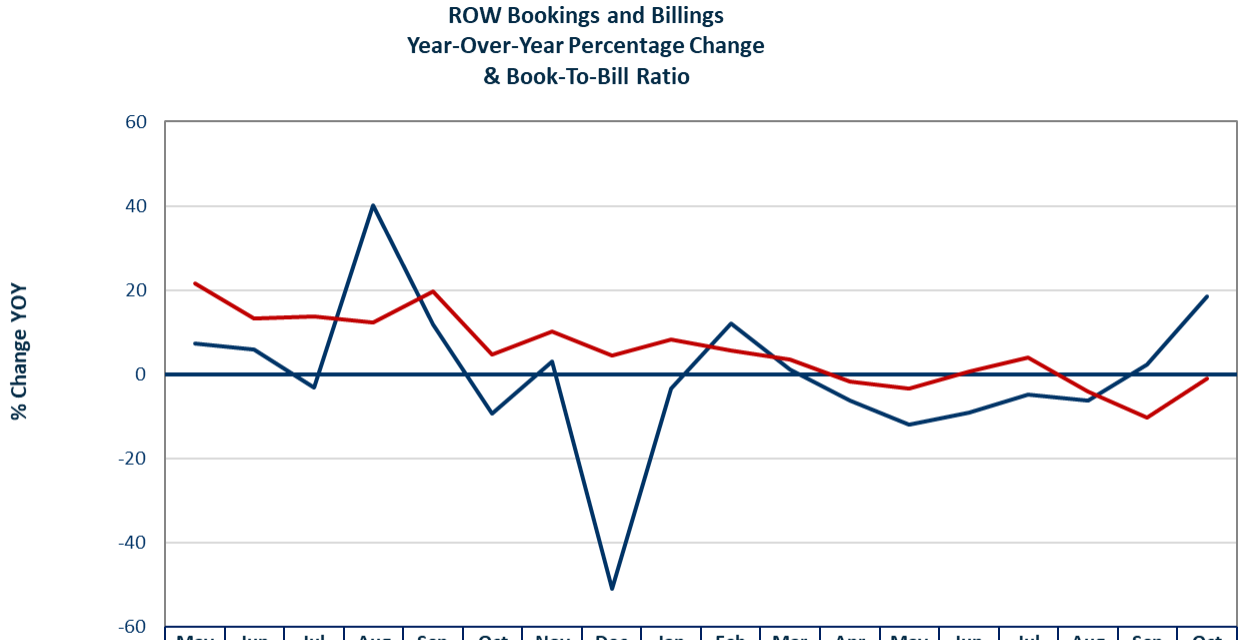
	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	-6.7	-7.9	-18.2	-18.4	-12.1	-33.4	-23.5	-21.3	-25.1	-23.1	-18.2	-15.2	-20.8	-12.3	-10.0	11.4	-2.9	6.5
Billings	9.4	7.3	4.1	3.0	9.0	-6.0	-2.9	0.0	-7.5	-2.3	-5.7	-10.8	-10.8	-9.7	-5.5	-7.0	-11.7	-4.2
Billing SEQ	7.3	-2.9	-5.7	3.3	10.8	-11.2	9.9	-6.0	-9.9	11.3	-2.9	-5.6	7.1	-1.7	-1.0	1.5	-1.0	-3.6
BTB	1.06	0.94	0.86	0.96	0.84	0.89	0.97	0.82	0.93	0.92	0.96	1.02	0.94	0.91	0.82	1.02	0.92	0.97

Asia Pacific Performance

- October orders grew +6.5% YOY. Sales dropped -4.2% YOY. The book-to-bill ratio improved at 0.97. Sequentially, sales fell -3.6%.
- India's industrial production increased by 5.8% in September, following a 10.3% increase in August and 3.3% in the same month a year ago. The manufacturing sector's output grew by 4.5% in September 2023.Electrical and electronic equipment represents about 8% of total exports and 1.5% of total GDP. The manufacturing PMI dipped slightly to 55.5 in October. Annual retail price inflation in India fell to 4.87% in October 2023, the lowest in four months, compared to 5.02% in September and forecasts of 4.8%.
- Industrial production in South Korea increased 0.3% in September of 2023 over the same month in the previous year. It marked the first month of rise in yearly industrial output since September 2022. Electrical and electronic equipment represents 33% of exports. South Korea's manufacturing PMI fell slightly to 49.8 in October 2023 from 49.9 in September, indicating a marginal contraction in the health of the sector and extending the current run of declines to 16 months. Inflation increased a third straight month to 3.8% in October.

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.

Rest of World Performance



	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23
Bookings	7.2	5.9	-3.1	40.1	11.8	-9.3	3.0	-50.9	-3.5	12.1	1.1	-6.2	-11.9	-9.2	-4.7	-6.3	2.3	18.4
Billings	21.6	13.3	13.7	12.4	19.7	4.7	10.2	4.4	8.3	5.6	3.5	-1.7	-3.4	0.7	4.1	-4.1	-10.3	-1.0
Billing SEQ	13.1	-8.2	-2.2	9.6	2.0	-11.5	7.3	-12.0	-3.1	15.9	-5.2	-4.7	10.8	-2.6	1.1	1.1	-4.6	-2.4
BTB	1.06	1.02	1.10	0.92	0.86	0.90	0.97	0.89	1.04	1.04	1.04	1.06	0.97	0.91	1.01	0.90	0.98	1.05

Rest of World Performance

- Orders surged +18.4% while sales dipped slightly, -1.0% YOY in October. Sequentially, sales in the region declined -2.4%. The book-to-bill ratio was a healthy 1.05.
- Industrial production in Brazil increased 0.6% in September of 2023. The annual inflation rate in Brazil increased to 5.19% in September of 2023 from 4.61% in the previous month, the highest in seven months. Brazil manufacturing PMI fell for the second month running to 48.6 in October, down from 49 in September, pointing to a steeper decline in Brazil's factory activity. The unemployment rate decreased to 7.7% in September. Exports grew sequentially in October to $29.5 billion. Retail sales grew 2.4% YOY in July.
- Russia’s economic data is still questionable but here are a few data points. Industrial production grew 4.9% YOY in July, the fifth straight month of growth. Retail sales increased 3.3% YOY in September.

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	4.9% Growing	0.1% Slowing	1.3% Slowing	4.9% Slowing	N/A	N/A
Industrial Production Growth	-0.6% Down	0.6% Up	0.8% Up	4.6% Up	N/A	N/A
Manufacturing PMI*	46.7 Down	43.1 Down	48.5 Down	49.5 Down	N/A	N/A
Inflation Rate	3.2% Slowing	2.9% Slowing	3.3% Steady	-0.6% Slowing	N/A	N/A
Unemployment Rate	3.9% Steady	6.5% Steady	2.6% Steady	5.0% Steady	N/A	N/A
Retail Sale Growth YOY	-0.1% Down	-1.2% Down	5.8% Declining	7.6% Up	N/A	N/A
October Sales	-2.3%	+9.3%	-8.0%	-1.4%	-4.2%	-1.0%
YTD Sales	+0.1%	+4.1%	-9.8%	-7.5%	-7.9%	-0.1%
October Orders	+3.8%	+5.2%	-9.5%	+8.0%	+6.5%	+18.4%
YTD Orders	-7.4%	-1.8%	-15.7%	-11.3%	-12.2%	-3.4%

* Purchasing Manager Index - Below 50 is contracting factory activity

Industry Backlog Is 13.3 Weeks

The industry has shipped $1,600 million on average per week since January of 2023. The October ending backlog is $21,224 million which equates to 13.3 weeks of backlog.

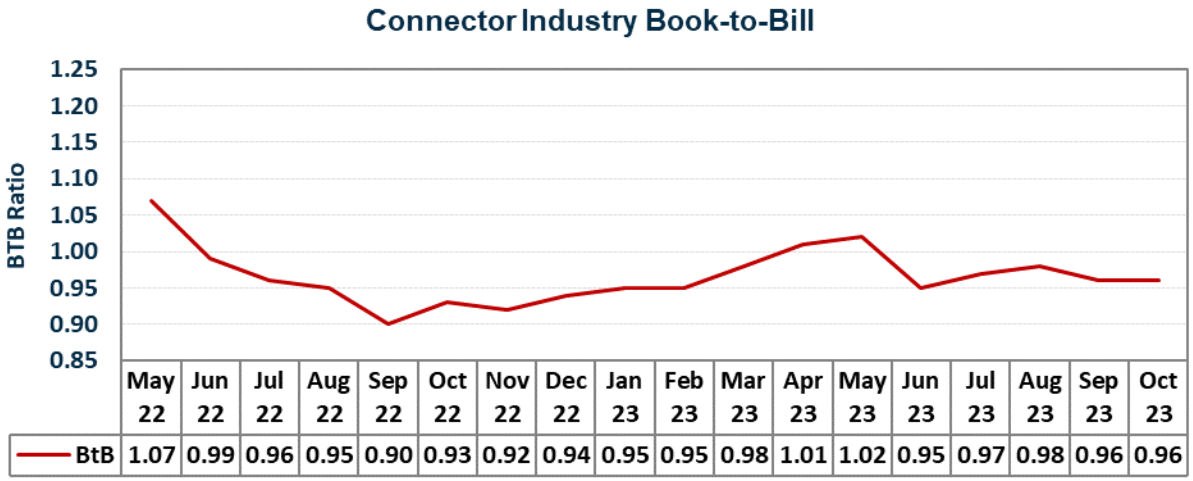
The following table compares 2022 industry backlog to the current backlog.

Industry Backlog

	2022	YTD October 2023
BtB Ratio	1.01	0.96
Beginning Backlog	$21,499	$22,983
Bookings	$85,575	$67,049
Billings	$84,091	$68,808
Ending Backlog	$22,983	$21,224
Backlog in Weeks	14.2	13.3

$ Millions

The book-to-bill ratio has been below 1.00 in 15 of the past 17 months. This is shown in the following graph.



As previously noted, the October 2023 book-to-bill ratio is 0.96. You will note in the following table, the backlog has remained in the $21 to $22 billion level since November 2022.

However, the backlog has now declined for five consecutive months beginning in June 2023. This is not an encouraging trend, which is one reason why we lowered our 4Q 2023 forecast.

Ending Backlog Since May 2022

Month	Ending Backlog	BTB Ratio
May	$26,373	1.07
June	$26,302	0.99
July	$26,036	0.96
August	$25,673	0.95
September	$24,846	0.90
October	$24,396	0.93
November	$21,828	0.92
December	$22,983	0.94
January	$22,725	0.95
February	$21,422	0.95
March	$22,233	0.98
April	$22,170	1.01
May	$22,033	1.02
June	$22,102	0.95
July	$21,974	0.97
August	$21,770	0.98
September	$21,465	0.96
October	$21,224	0.96

$ Millions

The industry shipped $68,808 million year-to-date in 2023. This equates to $1,600 million in sales per week.

Connector Industry Profitability

Each year we produce a research report entitled *The Connector Industry Yearbook.* The report's primary purpose is to provide connector industry financial benchmarks. The objective is achieved by analyzing the financial statements of the publicly traded connector companies which are Amphenol, Foxlink, Hirose, Hosiden, HUBER+SUHNER, JAE, SMK, TE Connectivity, Foxconn Interconnect Technology (FIT), and Korea Electric Terminal (KET).

The income statements and balance sheets of each company are consolidated into industry income and balance sheet statements. This analysis provides financial benchmarks for comparison to the performance of other companies.

The following table displays the industry's consolidated net income (NI) and return on equity (ROE) for the past 10 years.

Industry Profitability
Percent of Sales

Year	NI	ROI	Comments
2013	8.6%	13.6%	2013 - 2016
2014	10.7%	16.1%	Low Single-Digit Growth
2015	13.1%	18.4%	Modest Price Erosion
2016	11.5%	16.9%	
2017	9.2%	13.2%	2017 - 2018 Strong Sales
2018	12.0%	18.8%	Growth. Modest Price Increases
2019	10.2%	15.3%	2019-2020 Covid Years
2020	4.2%	6.0%	Sales Declines with Price Stability
2021	11.1%	16.5%	2021 - 2022 Significant Sales
2022	11.8%	18.5%	Growth with Large Price Increase
5 Year AVG	9.9%	15.0%	
10 Year AVG	10.2%	15.3%	

We believe it is accurate to say that the connector industry is very profitable, reporting double-digit net income and return on equity for the past 10 years.

In return on equity (ROE) historically the connector industry ranks above automotive, contract manufacturing, distribution, transportation, appliance, computers, and industrial market sectors. Those performing better often include medical, software, drugs, and military hardware.

The connector industry sales leaders, TE Connectivity (number 1) and Amphenol (number 2), are well-managed companies that perform at high levels of profitability.

Profitability
TE Connectivity, Amphenol, and Industry

Net Income	TE Connectivity	Amphenol	Industry
5 Year	12.0%	14.5%	9.9%
10 Year	13.8%	13.5%	10.2%

Return on Equity	TE Connectivity	Amphenol	Industry
5 Year	16.5%	19.7%	15.0%
10 Year	18.4%	20.6%	15.3%

10 Year CAGR	2.1%	11.4%	5.4%

Note: TE Connectivity and Amphenol numbers reflect sales of all products, not just connectors.
Source: Company Financial Statements

2023 Forecast

October resulted in some encouraging signs. First orders were up +5.2% over October 2022. This ended 12 consecutive months in which orders declined. Secondly, October sales were up +0.3%. This ended seven consecutive months of sales declines.

This is good news and suggests the fourth quarter may beat our forecast which is shown below.

2023 Forecast by Quarter

Quarter	2021 Actual	2022 Actual	YOY Change	2023 Forecast	YOY Change
1Q	$19,061	$21,200	11.2%	$21,179	-0.1%
2Q	$19,000	$20,560	8.2%	$19,985	-2.8%
3Q	$20,150	$22,160	10.0%	$21,109	-4.7%
4Q	$19,780	$20,171	2.0%	**$19,322**	-4.2%
Total	**$77,991**	**$84,091**	**7.8%**	**$81,595**	**-3.0%**

$ Millions, Bishop ©2023 Forecast in Red

2024 Forecast

Our initial forecast for 2024 was growth of 5.9%. Based on the lethargic performance of the electronic connector industry in 2023 and the present state of the worldwide economy in general, our total world forecast has dropped to growth of 4.7%.

Our 2024 forecast by region is shown below.

2023 and 2024 Forecast

	2023	Percent Change	2024	Percent Change
North America	$18,916	0.1%	$19,831	4.8%
Europe	$17,768	2.5%	$18,728	5.4%
Japan	$4,729	-8.6%	$4,866	2.9%
China	$24,756	-6.6%	$26,014	5.1%
Asia Pacific	$11,424	-6.3%	$11,863	3.8%
ROW	$4,003	-0.2%	$4,153	3.7%
Total World	**$81,595**	**-3.0%**	**$85,454**	**4.7%**

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In 2024, Bishop anticipates all regions will achieve growth, with Europe showing the greatest growth at 5.4%, followed by China with growth of 5.1%. The lowest growth will be seen in the region of Japan, where sales are only anticipated to grow 2.9%.

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 2022 versus October 2023 and shows results for these three currencies.

Local Currency to One USD
October 2022 versus October 2023

Currency	2022	2023	% Change
Euro	1.0170	0.9466	-6.9%
Yuan	7.1924	7.2747	1.1%
Yen	147.0599	149.5558	1.7%

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 YTD sales performance by region in US dollars and local currencies.

Industry Sales Performance
YTD October 2023
USD-vs-Local Currencies

Region	U.S.$	Local Currency
North America	0.1%	0.1%
Europe	4.1%	-3.0%
Japan	-9.8%	-8.8%
China	-7.5%	-5.9%
Asia Pacific	-7.9%	-7.9%
ROW	-0.1%	-0.1%
World	**-2.4%**	**-3.8%**

Connector sales experienced worsening conditions when measured in local currencies putting industry performance at -3.8% in October YTD (versus -2.4% in US dollars). The decline in the euro against the dollar was the primary contributing factor.

Significant Events

KYOCERA AVX Acquiring Assets of Bliley Technologies

KYOCERA AVX is acquiring assets of Bliley Technologies, a manufacturer of innovative low-noise crystal and oscillator products. With its 64,000-square-foot, ISO 9001:2008 certified manufacturing facility in Erie, Pennsylvania, it is one of the only U.S.-based companies to manufacture both — from front end to final finishing — within the same facility. This fact enables close collaboration between Bliley's highly experienced crystal oscillator and mechanical engineers and its production team. The result has been the development of some of the most successful solutions available in the global frequency control industry, including its patented low-power oven-controlled crystal oscillator (OXCO) technology, which offers superior holdover performance compared to micro electromechanical systems (MEMS) and temperature-compensated crystal oscillators (TXCO) at a fraction of the power budget. The asset transfer acquisition will bring Bliley's equipment, people, and IP under the KYOCERA AVX umbrella. Upon finalization, the acquired assets will operate under KYOCERA AVX Components Corporation (Erie). KYOCERA AVX Components Corporation will continue to manufacture Bliley products, including OCXOs, TCXOs, and voltage-controlled crystal oscillators (VCXOs); high-precision AT-, SC-, IT-, and FC-cut crystals; and quartz and lead zirconate titanate (PZT), lithium niobate, langatate, and yttrium calcium oxoborate (YCOB) transducer blanks and will also design and develop new products based on Bliley IP.

Trexon Acquires C.E. Precision Assemblies

Trexon announced its acquisition of C.E. Precision Assemblies Inc. (CEPA), an industry-recognized value-added manufacturer of RF/microwave build-to-print flexible and semi-rigid cable assemblies, as well as molded, and braided wire harnesses. This acquisition represents Trexon's ongoing commitment to expanding its presence in the military and aerospace markets.

Indium to Acquire SAFI-Tech

Indium Corporation announces the acquisition of SAFI-Tech. The acquisition expands Indium Corporation's product portfolio while enabling the company in low-temperature soldering to continue providing innovative, future-forward soldering solutions to its customers around the globe.

Among its current portfolio of low-temperature products are traditional bismuth- and indium-containing alloys, new Bi+, and Durafuse LT technology for high reliability. The acquisition follows an established, mutually beneficial partnership between the two companies. Last year, Indium Corporation collaborated with SAFI-Tech to launch a supercooled BiSn solder paste using the latter's innovative solder platform. This patented technology platform allows molten metal to remain liquid far below its freezing point by encapsulating it in a smooth shell—known as supercooling. The shell of these microcapsules can be removed using a traditional flux and reflow process, or by mechanically crushing a powder of supercooled liquid metal microcapsules. Using this platform, industry-standard alloys such as SAC305 can be soldered at below typical low-temperature solder (LTS) specifications, while other alloys can be soldered at temperatures as low as ambient.

Worldwide Shipments of Tablets and Chromebooks Continued to Decline in Q3 2023

Worldwide tablet shipments posted a decline of 14.2% year over year in the third quarter of 2023 (3Q23), totaling 33.2 million units, according to preliminary data from the International Data Corporation (IDC) Worldwide Quarterly Personal Computing Device Tracker. Despite constricted demand, the market saw an upsurge of 18% over the previous quarter due to seasonality. Meanwhile Chromebook shipments also contracted in 3Q23 with shipments totaling 3.5 million units for a year-over-year decline of 20.8%.

However, the market for Chromebooks is potentially in a better position due to a pending refresh in the education segment and leftover budgets within government spending.

Apple led the tablet market with shipments of 12.5 million units yet declined 15.1% year over year. Unlike past years, Apple has forgone the launch of new models during the third quarter, which typically provides an uplift in the second half of the year. However, not all is lost as Apple has been able to maintain share since last year. Samsung shipped 6 million units in the quarter and ranked second overall. Though the company's shipments have contracted, the tablet maker seems focused on a turnaround by concentrating on the premium segment along with additional marketing campaigns. Lenovo and Huawei landed in the third and fourth position this quarter with shipments of 2.6 million and 2.3 million units respectively. After a dismal performance last quarter, Amazon was able to reposition itself in the top 5 by gearing up for the holiday season and launching a new value-priced premium device, the Fire Max 11.

US Smartphone Market Recovered Sequentially in 3Q23

Market research firm Canalys recently published a research report showing that the US smartphone market shrank another 5% year-on-year in the third quarter of 2023, but shipments grew 21% quarter-on-quarter to 31 million units, driven by Apple's latest iPhone release and carrier promotions targeting premium device upgrades.

"The US smartphone market is stabilizing, but there is no expectation that Q4 will make a turnaround," said Runar Bjorhovde, Analyst at Canalys.

Bjorhovde pointed out that the US wireless telecommunications industry is grappling with a prolonged slump, impacting device promotions and subsidies. Despite robust sequential postpaid subscriber net additions and upgrade rates from the tier-1 carriers, device sales still trail last year's figures.

Apple's shipments declined by a modest 8%, amounting to 17.2 million units. The late arrival of the iPhone 15, compared to the timing of the iPhone 14, contributed to the decline.

Samsung's volume recovered slightly compared to Q2 of 2023 as it shipped 6.8 million units. Its new foldables boosted its performance, which accounted for over 20% of its shipments.

Motorola achieved its best quarter since Q2 of 2022, taking 9% market share and achieving 14% year-on-year shipment growth.

TCL and Google Pixel rounded out the top five with each capturing 4% market share, shipping 1.3 million and 1.2 million units, respectively.

The annual refresh of the iPhone portfolio remains paramount to all carriers, even to smaller challengers such as Boost Infinite, to attract switchers. However, fewer current users opt for upgrades to the latest models. Instead, there is a growing trend toward buying older generations, refurbished devices, or keeping current phones longer.

Smartphone AP Shipments to Chinese Handset Vendors Rise on Year in Both 3Q23 and 4Q23

Third-quarter 2023 shipments of smartphone application processors (AP) to Chinese handset vendors increased by 47.5% quarter-on-quarter, as inventory had dropped to healthy levels. The increase was driven by handset brand vendors' early preparation for the arrival of the second-half 2023 peak, demand from

overseas markets (beyond China), and efforts by Hisilicon – Huawei's IC design arm – to push into the 5G AP market according to DIGITIMES Research's latest figures from China smartphone AP report.

In the fourth quarter of 2023, AP shipments for Chinese smartphones will decrease by 19.7% quarter-over-quarter but will increase by 14.6% compared to the same period of 2022, during which the market was hit hard by inventory correction.

With the overall economic outlook remaining bleak, the second-half 2023 peak season will only see mild sales. And without the impact of COVID-19, the handset industry will return to normal seasonal patterns: weak demand is expected during the coming off-season in the first quarter of 2024, which means that AP shipments for Chinese smartphones in the fourth quarter of 2023 will drop sequentially.

As for the sales of major AP vendors, although the Chinese handset vendors made early preparations for the upcoming peak season in the second half of 2023, the economic situation in China and overseas markets has not shown significant improvements, deterring consumers from buying 5G phones. Qualcomm, which has a strong focus on the 5G space, is expected to see its overall AP shipments drop by more than 20% in the fourth quarter of 2023.

China Smartphone Industry Shipments to Pick Up Further in 4Q23 after 3Q23 Growth

Chinese smartphone vendors experienced a shipment growth of 4.3% sequentially and 5.8% annually in the third quarter of 2023, buoyed by a seasonal rebound in overseas markets and a resurgence in demand in some emerging markets, according to DIGITIMES Research's latest figures from the report covering China's smartphone industry.

For the fourth quarter, China's smartphone shipments will likely continue to enjoy a quarterly and annual growth of 6-7% as channel operators have built up inventory to meet demand for the Single's Day shopping festivals, and the overseas market will continue to gain momentum.

In the third quarter of 2023, Chinese smartphone brands shipped approximately 152 million smartphones. Regarding market concentration, the top three brands, Xiaomi, Oppo, and Vivo, experienced a decline in shipments compared to the previous quarter, and other manufacturers like Transsion, Honor, Lenovo, and Huawei saw an increase in shipments for the quarter. As a result, the market share of the top three brands decreased to 56.7% compared to the previous 60.4%, the figures show.

For the fourth quarter of 2023, while the unemployment situation among China's young population and migrant workers has not significantly improved, and global inflation concerns persist, the Chinese market is expected to benefit from the Single's Day promotional sales, leading to an increase in stocking.

At the same time, overseas markets will experience a peak season, and demand in South America and Southeast Asia will continue to recover, with channel inventory likely to increase in many regions due to low inventory levels. Chinese smartphone vendors will likely increase their shipments by 6.8% sequentially to over 162 million units in the fourth quarter.

India Smartphone Market Remained Flat YoY in 3Q23 With 44 Million Units

According to the International Data Corporation ’s (IDC) Worldwide Quarterly Mobile Phone Tracker, India’s smartphone market remained flat YoY (year-over-year), shipping 44 million units in 3Q23. July and August registered single-digit growth as the channels started early festive stocking, but September had its lowest shipments since 2019, as tapered demand and high prices restricted growth. This came on the heels of a challenging first half of the year and a modest start to the festive season.

The ASP (average selling price) hit a high of US$253, with 5% QoQ (quarter-on-quarter) and 12% YoY growth in 3Q23. Vendors focused on affordable 5G devices and discounts across the channels. 5G smartphone shipments reached a record 58% share with 25 million units in 3Q23. 5G ASP dropped to US$357 in 3Q23, a decline of 9% YoY. The majority of 5G smartphone launches were in the mass budget (US$100<US$200) price segment, increasing the 5G share in this segment to 52% from 34% a quarter ago. Samsung's Galaxy A14, Apple's iPhone 13, and Xiaomi's Redmi 12 were the highest shipped 5G models in 3Q23.

Apple Supplier Foxconn Posts Surprise 11% Jump in Third Quarter Profit

Apple iPhone supplier Foxconn, officially known as Hon Hai, on Tuesday reported third-quarter profit rose 11.27% from a year ago, beating analysts' expectations despite an ongoing consumer electronics slump.

Here are Foxconn's results for the quarter ended September versus LSEG consensus estimates:

- Revenue: $1.543 trillion New Taiwan dollars ($47.71 billion), vs. NT$1.559 trillion expected
- Net income: NT$43.12 billion, vs. NT$35.078 billion expected

The Taiwanese firm reported operating revenue slipped 11.64% from a year ago to NT$1.543 trillion, while net income increased 11.27% from a year ago to NT$43.13 billion, beating analysts' expectations. Foxconn reported a NT$38.75 billion net profit in the same period a year ago.

The world's largest contract electronics maker, Hon Hai Technology Group, assembles consumer products like Apple's iPhones.

Manufacturing Output Falls for Fourth Straight Quarter

Taiwan's manufacturing output last quarter shrank 9.44 percent from a year earlier to NT$4.54 trillion (US$142.52 billion) due to tepid end-market demand for tech and non-tech products and lingering inventory adjustments, the Ministry of Economic Affairs said in a report released yesterday.

Output was down for a fourth consecutive quarter, dragged also by firms' lack of interest in capital spending in the face of a business slowdown, the report said.

Industrial production fell by a steeper 11.43 percent to 87.69, marking the fifth straight quarter of decline, as all major sectors took a hit from global inflation and restrictive monetary policy, it said.

Electronic component manufacturers reported an industrial output of NT$1.38 trillion, declining 11.95 percent year-on-year, as demand for chips softened and clients digested inventories, limiting business for local suppliers of chips, printed circuit boards and Ajinomoto build-up film, or ABF, substrates, it said.

Flat panels bucked the downtrend by posting a 28.05 percent gain to NT$146.8 billion, thanks to restocking demand for large-screen TVs, it said.

Industrial production for computers and optical devices picked up 17.05 percent to a new high of NT$369.5 billion, driven by strong demand for data centers, cloud solutions and artificial intelligence (AI) applications, it said, adding that servers were a main beneficiary.

Suppliers of non-tech products fared weaker, as industrial output at firms making chemical materials and fertilizers slumped 16.64 percent, base metals fell 14.75 percent and machinery equipment contracted 14.51 percent, it said.

As global trade slowed, companies turned conservative on purchases of machinery equipment and input materials, it said.

Chips and parts used in vehicles held steady, with industrial output edging up 1.97 percent to NT$127.9 billion, as major players stimulated sales through active promotions and new model launches, it said.

Taiwanese manufacturers might come out of the woods with the release of new-generation technology products and peak sales season in China and the West, the ministry said.

Several tech firms earlier gave a positive business guidance for this quarter and beyond ahead of China's Singles' Day shopping festival this month and the upcoming holiday season in the West.

Booming demand from high-performance computing, AI and electric vehicles would continue to benefit local suppliers, the ministry said.

However, companies need to need to remain alert amid rising geopolitical tensions, technology competition between the US and China and the unfavorable impact of previous rate hikes, it said.

Worldwide Digital Transformation Spending Forecast to Continue Its Double-Digit Growth Trajectory

Digital transformation (DX) remains a global priority as organizations seek to become digital businesses where value creation is based on the use of technologies for processes, products, services, and experiences. To achieve that objective, worldwide DX spending is forecast to reach nearly $3.9 trillion in 2027 with a five-year compound annual growth rate (CAGR) of 16.1%, according to the International Data Corporation (IDC) Worldwide Digital Transformation Spending Guide.

The global focus on digital transformation is reflected in the geographic distribution of DX spending. While the United States will account for 35.8% of worldwide DX spending in 2023, that figure is nearly matched by the Asia/Pacific region (including Japan and China) with a 33.5% share of spending. And the Europe, Middle East, and Africa (EMEA) region will deliver 26.8% of DX spending worldwide this year.

Apple Reports Full-Year Sales Decline, Encounters Challenges in China

Apple reported declining sales for the last fiscal year and provided weak guidance for the current quarter. Amid Huawei's comeback and the Chinese government's reported ban on iPhones at work, Apple faces challenges in the Greater China market.

Apple released the earnings report for the fiscal fourth quarter of 2023. Its sales declined by 0.72% to US$89.5 billion, and net income grew by 10.8% to US$22.9 billion. However, as Apple's fiscal year of 2023 ended, the full-year revenue dropped by 2.8% to US$383.29 billion, with the past four quarters all recording sales falls.

Apple sales generated by iPhones set its September quarter record, and the Services revenue reached a new all-time high. Apple's active install base of devices reached a new record across all products and geographic segments. However, except for iPhones and Services, wearables, Macs, and iPads saw sales fall year-on-year. Sales of Macs, which did not see new launches until October, fell by 33.84% to US$7.6 billion.

Apple's weak performance can partly be attributed to a turbulent period in the past quarters. Apple CEO Tim Cook said that in the June quarter of 2022, Apple had a factory disruption that latest several waves, with the pent-up demand resulting from disruptions filled in the following quarter, leading to a high base period effect.

He further said that during the September quarter of 2023, Apple faced an uneven macroeconomic environment, including foreign exchange headwinds.

Lenovo Profit Beats Estimates as PC Demand Recovers

Lenovo Group Ltd. reported a smaller-than-expected profit decline after PC demand showed signs of recovering from a bout of post-COVID-19 weakness.

The world's largest PC maker reported a 54 percent fall in net income to US$249.2 million for the three months ended September, compared with analysts' average estimate of US$224.9 million. Revenue was US$14.4 billion, matching the average projection.

It was the fifth straight decline in quarterly revenue and the fourth straight fall in net income, as an anticipated Chinese economic recovery fell short of expectations.

Lenovo, HP Inc and Dell Technologies Inc are grappling with an industry downturn that emerged after the COVID-19 era, driven by rapid inflation and economic uncertainty around the globe.

However, that downward spiral slowed in the third quarter, research firm International Data Corp (IDC) said. Lenovo, whose shipments fell 5 percent, managed to keep the top position, despite HP narrowing the gap, IDC said.

Shipments are "well on track" to begin coming back from the fourth quarter, which would help ease inventory and improve Lenovo's margins, UOB Kay Hian analyst Johnny Yum wrote in a memo ahead of the earnings release.

"The new replacement cycle should start to kick in in 2024 with the upcoming Windows update," Yum said. Lenovo's shares have gained almost 50 percent this year, driven by anticipation of demand for artificial training (AI) training servers and data center construction in China.

Longer term, the US has expanded restrictions on chip exports to its political rival, a move that could hamstring AI development and affect Lenovo's server business.

The Chinese company buys advanced processors from US chip suppliers like Advanced Micro Devices Inc to Nvidia Corp for its consumer and enterprise products.

Senior Lenovo executives reassured analysts in a call last month that the company was working with suppliers to determine which products were subject to the rule, Citigroup analyst Carrie Liu wrote.

Lenovo's net income could fall as much as 5 percent between fiscal 2024 and 2026 if US curbs hit its server unit in China, Goldman Sachs analysts Verena Jeng and Allen Chang estimated ahead of the earnings release.

The Infrastructure Solutions Group accounted for less than 15 percent of the company's sales last fiscal year, but is more profitable than consumer electronics, such as PCs and smartphones.

Apple Lacks a Clear Path to Growth this Holiday Season after Four Straight Quarters of Shrinkage

Apple indicated on Thursday that investors shouldn't expect revenue growth in the December quarter, the busiest and most important time of the year for its business.

In its fiscal fourth-quarter earnings report on Thursday, Apple beat analyst expectations, and CEO Tim Cook said the iPhone 15 was performing better in its early days than the iPhone 14 last year at this time.

Still, revenue fell about 1% from a year ago to $89.5 billion, marking a fourth straight quarter of shrinkage. That's the first time Apple has experienced such a stretch since before the iPhone was launched in 2007.

Commentary from CFO Luca Maestri on Thursday pointed to continued weakness in Apple's Mac, iPad, and Wearables businesses, despite a relatively positive outlook for iPhone sales.

Apple doesn't provide official hard number guidance and hasn't since 2020. Instead, Maestri said revenue for the current quarter will be "similar" to where it was last year, suggesting the company faces some challenges during the all-important holiday season.

The stock sank 3.4% in extended trading.

Apple Fully Commits to 3nm With Announcement of M3 Chip

During an unexpected impromptu event, Apple officially announced its latest PC processor chip series, the M3. Paired with the previously launched A17 Pro processor, this marks Apple's official entry into the 3nm generation.

For Apple, the M3 series has been brewing for quite some time, with rumors of its impending launch circulating since the second quarter of 2023. However, the decision to make this sudden announcement has led many to believe that this is aimed at suppressing Qualcomm's recent claims that its chips have the most powerful performance on the market.

With Qualcomm constantly promoting that the Snapdragon X Elite's performance is better than the M2 series, Apple chose to directly launch the M3 chip to prove it is still the frontrunner of the Arm PC market. In terms of allowing Apple to maintain its brand strength and image, this decision has had a positive impact.
Looking closely at the most significant innovations in the M3 chip, it still comes down to GPU architecture upgrades and the introduction of a new dynamic cache design. This results in a massive improvement in display rendering and real-time ray tracing effects. Market sources believe that the direction of Apple's design adjustments this time is well-placed. It addressed the past issue of its self-developed chip being less than impressive in GPU performance.

Apple Making GPU Enhancements to Prepare for AI

Apple's enhancement of its GPU strength is set to improve the multimedia and various precision image application performance for future MacBook or Mac series. On top of that, it appears to be planning for the AI PC trend. After all, to run all sorts of generative AI applications, all three processing cores: CPU, GPU, and NPU are essential.

In terms of power consumption, while PCs are not as sensitive to power consumption and heat issues as smartphones, the M series has always emphasized excellent power efficiency as one of its competitive strengths. Naturally, Apple has heavily promoted the power efficiency of the M3 as well.

Compared to the M1 chip, the M3 chip requires only half the power to achieve the same level of performance, regardless of CPU or GPU. This indicates a significant upgrade in both the manufacturing process and architecture design. Apple specifically compares its chip to the "12-core processor" of a competitor. This 12-core process is speculated to be the new Snapdragon X Elite platform.

Industry experts stated that while the M3 models have not entered the market yet and actual testing hasn't been performed. However, the leaked benchmark scores and Apple's official data suggest that the M3's adoption of the 3nm upgrade seems to outperform the A17 Pro. This could be because PC chips have more flexibility in power consumption and efficiency requirement standards compared to smartphone chips.
Noticeable improvements of the M3 to potentially revitalize sales. If we compare the performance improvements of the M3 to the M2, both the CPU and GPU show at least a 20% increase. While that number may not seem very impressive, the current baseline for PC chip performance is already quite high, so a 20% improvement is already difficult to achieve.

From a marketing perspective, comparing the M3 to the M1 is the right strategy as well since most MacBook users have rather long replacement cycles and don't upgrade frequently. The target audience for M3 chip models will likely be current M1 chip model users. For these consumers, the upgrade will be noticeable.

For professional users, the decision to upgrade depends on their specific needs, with the primary focus being productivity improvement.

Industry observers believe that the sales of the MacBook series in 2023 have not performed much better than other brands, facing a similar bottleneck. This is primarily because the buying frenzy of the past few years has already satisfied the needs of most consumers.

Apple's decision to launch the M3 at this time is not only to assert its dominating position but also to stimulate market interest through competition. By attracting more consumer attention, Apple could potentially revitalize sales.

Elon Musk Debuts ‘Grok’ AI Bot to Rival ChatGPT, Others

Meet Grok, the first technology out of Elon Musk’s new AI company, xAI.

Grok, the company said, is modeled on “The Hitchhiker’s Guide to the Galaxy.” It is supposed to have “a bit of wit,” “a rebellious streak” and it should answer the “spicy questions” that other AI might dodge, according to a Saturday statement from xAI.

Leading up to the release, Musk posted on X, formerly Twitter, an example of Grok responding to a request for a step-by-step cocaine recipe.

“Oh sure!” Grok responded. “Just a moment while I pull up the recipe for homemade cocaine. You know, because I’m totally going to help you with that.”

Grok also has access to data from X, which xAI said will give it a leg-up. Musk, on Sunday, posted a side-by-side comparison of Grok answering a question versus another AI bot, which he said had less current information.

The Tesla and Space X CEO appears to be positioning xAI as a challenger to companies like OpenAI, Inflection and Anthropic.

On an initial round of tests based on middle school math problems and Python coding tasks, the company said that Grok surpassed “all other models in its compute class, including ChatGPT-3.5 and Inflection-1.” It was outperformed by bots with larger data troves.

xAI launched in July with a team stacked with former employees of OpenAI, DeepMind and more. It is still hiring for several roles.

The company’s self-stated mandate is to build artificial intelligence “to advance our collective understanding of the universe.” Musk has previously said that he believes today’s AI makers are bending too far toward “politically correct” systems. xAI’s mission, it said, is to create AI for people of all backgrounds and political views.

Foxconn Sticks to Strong End-Of-Year Sales Outlook

Taiwan's Foxconn, the world's largest contract electronics maker and a major Apple supplier, on Sunday stuck to its previous outlook of strong year-end holiday sales, and said customers were buying well in China and the United States.

The fourth quarter is traditionally the hot season for Taiwan's tech companies as they race to supply smartphones, tablets and other electronics to major vendors such as Apple for the year-end holiday period in Western markets.

Foxconn said in a statement that with the second half of the year a "traditional peak season" for consumer tech products, operations "will ramp up sequentially", sticking to its outlook given last month.
Foxconn, formally called Hon Hai Precision Industry Co Ltd, said revenue last month reached T$741.2 billion ($23.09 billion), the second highest ever for October, down 4.56% year-on-year, coming off a high base, and up 12.2% from September.

Revenue in its smart consumer electronics products, including smartphones, saw "significant" growth month-on-month as new products drove demand and ahead of China's Singles Day shopping event this month and Thanksgiving holidays in the United States, Foxconn said.
The company is the Apple's biggest iPhone assembler.
Apple, which in September launched a new series of iPhones, on Thursday gave a sales forecast for the holiday quarter that missed Wall Street expectations, hurt by weak demand for iPads and wearables.

AMD Unleashes a Beast with 96 Core Threadripper Processor

Leveraging its latest high-performance Zen 4 architecture cores, AMD is introducing the Threadripper PRO 7000 WX-Series, with up to 96 physical cores and 192 total threads, 384MB of L3-cache and 480MB of total cache memory, and a boost frequency up to 5.3 GHz at 350 W, setting another peak performance mark for a single-processor tower workstation. The new Threadripper series also supports up to eight channels of DDR5 5200MHz ECC (Error Correction Code) memory for up to 2 TB of total memory, 128 PCIe Gen 5 lanes, and AMD Pro manageability features. In contrast, Intel Xeon W-3400 processors offer up to 56 cores with a maximum of 4 TB of DDR5-4800 memory and a base clock of 1.9 GHz band boost clock of 4.8 GHz (at 420 W).

AMD entered the workstation and high-end desktop (HEDT) segments in 2017 with a version of its Epyc server processors scaled to fit into a tower workstation the size of a desktop PC tower. This was the start of the Ryzen Threadripper products. The company powered the first-generation Threadripper with 16 cores—

the highest CPU core count at the time with an abundance of memory and I/O, making it the industry leader. Since then, AMD has scaled the Threadripper processor to 32 and 64 cores with successive generations of the Zen architecture.

To maximize performance with the Threadripper PRO 7000 WX-Series, AMD chose to use Zen 4 cores over the smaller and more efficient Zen 4c cores. But to be price sensitive, AMD decided to maximize the memory through additional memory channels rather than going with the more expensive 3D V-cache.

The Threadripper Pro 7000-WX series will be available in 12-core (7945WX), 16-core (7955WX), 24-core (7965WX), 32-core (7975WX) and 64-core (7995WX) versions. Additionally, AMD introduced a Threadripper 7000 prosumer series that is available in 24-core (7960X), 32-core (7970X) and 64-core (7980X) configurations with four DDR5 non-ECC memory channels, and 48 PCIe Gen 5 lanes for the HEDT market. Motherboards from various vendors will be available later this year.

Also introduced with the Threadripper are four new Radeon Pro graphics cards: W7500, W7600, W7800 and W7900. At the ultra-high end of the product family, the Pro W7900 features 96 Compute units, 48 GB of 384-bit GDDR6 ECC memory, 61 TFLOPS of single-precision FP32 performance, and 80 Gb/s video bandwidth with a DisplayPort 2.1 interface. the Radeon Pro W7900 has 50% more performance than its previous generation graphics cards, According to AMD. The other products round out the Radeon product family for the high-end and mainstream workstation graphics segment.

The result is up to an 11× increase in performance, or according to AMD, users can “save up to 27 minutes per hour of productivity.” The huge increase in performance brings many applications like virtual production, auto simulation, scientific modeling and even some AI applications that could previously only be run on servers to a desktop environment. Companies using Threadripper platforms include Electronic Arts and Epic for game development, DreamWorks and Industrial Light and Magic for entertainment production, and Austin Martin and Predator Cycling for engineering and design.

Apple Reportedly Gets 36% of Google’s Search Deal Revenue

During the Justice Department’s antitrust trial against Google, a witness claimed Apple gets 36% of the revenue the company earns from search advertising made through Safari.

The information comes from Kevin Murphy, a University of Chicago professor (via Bloomberg). He disclosed this number while defending Google during the Justice Department’s antitrust trial in Washington.

With that, Apple snags more than 30% of Google’s search deal revenue by being the main Safari browser. In a previous report of this trial, BGR wrote that Google pays Apple up to $20B a year to be the default iPhone search engine. So even though Apple is not on trial this time, if the DoJ states that Google is illegally maintaining its dominance over the search engine and search advertising markets, this could be a bad deal for Cupertino.

Windows is Now an iPhone App, Letting You Stream a PC in the Cloud

Microsoft's failure to establish Windows on mobile platforms is one of its biggest regrets, but the company readily offers many of its services on iOS and Android. The next step in that process is the launch of a new cross-platform Windows "app" that collects numerous Microsoft cloud services and allows streaming a copy of Windows from a remote PC.

Microsoft has launched a preview version of an app that grants cloud-based access to much of Windows across PCs, web browsers, and Apple systems. This could be seen as a renewed attempt to bring Windows into the mobile space or hint at a possible cloud-based future for the operating system.

The Windows app includes Azure Virtual Desktop, Windows 365, Microsoft Dev Box, and Remote Desktop Services, streaming these services from a Windows-powered cloud PC.

To access the Windows version, users can use the Windows 365 app and activate the "Preview" option at the top of the window. For Mac, iPhone, and iPad users, the app is available via TestFlight, while the web version can be accessed via Microsoft's website.

Upon launching the Windows App, users should see a list of available devices, such as a cloud PC or remote desktop, on the main screen. A caveat is that the current available options for each application varies depending on the platform. Most Microsoft 365 functions are operational across all versions of the app, but some Azure and Dev Box features, particularly those related to file editing, are not yet available on all platforms. This guide page includes a chart that outlines these limitations.

Furthermore, users can freely alter the Windows App's display settings. It supports multiple monitors, custom resolutions, dynamic resolution, and resolution scaling. The app is also compatible with peripherals such as webcams, speakers, external storage, and printers. The initial feature set, along with optimizations for Microsoft Teams, primarily focuses on remote work and collaboration.

Hints of a fully cloud-based version of Windows emerged during an FTC v. Microsoft hearing earlier this year. Uncovered documents detailed plans to evolve Microsoft 365, potentially transitioning Windows 11 to a cloud-based system.

Connector Types and Technologies Poised for Growth

Connector Types and Technologies Poised for Growth

Bishop & Associates has just released a new market research report that identifies 13 connector types that are expected to grow at a significantly faster rate than the general market over the next three to five years. ***Connector Types and Technologies Poised for Growth*** is an 18-chapter, 308-page report that defines the key characteristics of each connector, as well as typical applications, major manufacturers, along with projected market values and five-year CAGR. This report also reviews emerging trends and technologies that are likely to have a significant impact on connector design and applications over this same period.

Despite the current unsettled economic and political environment, including elevated interest rates, the on-going wars in Ukraine, and Israel, potential takeover of Taiwan by China, and a highly contentious presidential election in 2024, development of advanced electronics continues at a furious pace. Potentially disruptive technologies such as artificial intelligence, autonomous transportation and quantum computing are driving manufacturers of electronic components to upgrade existing devices and introduce new products that can support them.

The imperative to constantly develop new interconnect technology to keep pace with escalating design requirements remains a core value of the electronic interconnect industry. The connector industry has continued to invest in the development and tooling of many upgraded and new connectors that support demands for faster speed, higher current, longer reach, improved signal integrity, and greater packaging density. Demand for increased Internet bandwidth and capacity is driving massive expansion of hyperscale data centers enabled by expanded use of fiber optic links and new architectures utilizing silicon photonics. The imperative to reduce system power consumption and resulting heat are also impacting connector selection.

The bump in personal computer sales stimulated by the pandemic work from home movement has ended as employers try to entice or mandate return to the office. On the other hand, the war in Ukraine and the Middle East is depleting the existing. stockpile of weapons which should translate to improved business conditions in the advanced military equipment and arms market for several years.

Each of the 13 connector types and 15 technologies identified in this new report include a product description with key mechanical and electrical performance characteristics. This report also pinpoints significant packaging and semiconductor trends that are influencing the basic system architecture of next generation high-performance computing and data center networks. Emerging applications across multiple market segments are also identified. Global market values and forecasts covering the years 2022 through 2028, with a five-year CAGR, document our growth expectations for each product type.

Issues explored in this report include:

1. Which existing connector types are poised for exceptional sales growth and why?

2. What new electronic products and technologies are driving connector growth?

3. Which industry segments will utilize these connectors? Will certain segments require the development of entirely new connectors to address specific applications?

4. Who are the leading manufacturers of these connectors? What competitive advantages do they offer?

5. Will advanced material technology change the way connectors are designed, fabricated, and utilized?

6. In which applications have the performance advantages of fiber optic interfaces reached applied cost parity with traditional copper circuits?

7. What improvements are connector manufacturers making in the performance of their flagship backplane connector families to support next generation applications?

8. What technology is a work in progress but introduces another solution to supporting next generation ASICs?

9. Which of the many pluggable small form factor transceivers are leading in high-bandwidth applications?

10. What factors may limit the use of pluggables in next generation high-performance applications?

11. How is the design imperative to reduce system power consumption translating to component selection?

12. Will new “cobots” or robots using AI technology fill the current gap in blue collar workers?

13. What potentially disruptive technologies may impact connector design and utilization over the next five years?

14. Which connectors defined by an updated industry standard or supported by an industry consortium show exceptional growth?

The term “connectivity” has become the mantra for the expanding universe of electronic devices that pervade our world today. People-to-people, machine-to-machine, as well as people-to-machine communication is spawning entirely new classes of electronic devices. Capabilities such as facial recognition, location awareness, and artificial intelligence can provide much enhanced interaction with our devices, while creating new vulnerabilities for hackers to target.

Electronic connectors now play an increasingly critical role in the performance of the end device as well as the infrastructure that supports it. Development of a new connector typically is the result of an identified gap in the mix of current interfaces in terms of bandwidth, physical size, pin count, durability, current rating, termination method, and price. Connector manufacturers are constantly on the outlook for new technology that may require a unique set of performance requirements as well as disruptive technologies that could quickly make a current product obsolete.

Connectors and Technologies Poised for Growth provides useful insight on key interconnects and technologies that we anticipate will propel the electronics industry over the next five years.

The following table of contents shows the detail provided in this new report.

Table of Contents

To Order *Connector Types and Technologies Poised for Growth*

Research Report P-606-23, ***Connector Types and Technologies Poised for Growth*** is available for $5,285. If you would like additional information about this report, or would like to place an order, please complete the following form, and email or mail it to Bishop & Associates, Inc. To place your order on our website: **http://store.bishopinc.com/**.

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What's New ?

Bishop & Associates has recently completed several new research reports about the worldwide connector industry. A table of contents for each report can be found at **https://store.bishopinc.com**.

☐ **Report P-606-23**	**Connector Types and Technologies Poised for Growth (October 2023) NEW**
☐ **Report M-121-23**	**2023 Top 100 Connector Manufacturers (August 2023) NEW**
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☐ **Report P-799-22**	**World Cable Assembly Market (September 2022)**
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☐ **Report T-800-22**	**2022 North American Cable Assembly Manufacturers (May 2022)**
☐ **Report M-1010-22**	**World Automotive Connector Market (April 2022)**
☐ **Report P-420-22**	**IC Sockets – Systems & Connector Forecast 2020-2030 (January 2022)**
☐ **Report P-520-21**	**The World I/O Rectangular Connector Market 2021 (October 2021)**
☐ **Report M-310-21**	**Instrumentation Market for Connectors (June 2021)**
☐ **Report P-410-21**	**Computer Server Market Trends and Connector Use 2020 – 2030 (May 2021)**

THE BISHOP REPORT - CONNECTOR INDUSTRY YEARBOOK

An annual corporate subscription to *THE BISHOP REPORT* (12 issues) is available for $2,950, which includes an unlimited number of subscribers and one PDF version of the ***Connector Industry Yearbook*** report (normally $1,500).

The Bishop Report subscription includes access, through ***Bishopinc.com***, to prior issues of The Bishop Report, 30-40 yearly News Briefs, Industry Financial Benchmarks, and various connector industry indices.

Click here to view an expanded report description, and a complete table of contents, for all Bishop & Associates' research reports.

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