

# **North America Atomic Clock Market Forecast to 2027 - COVID-19 Impact and Regional Analysis by Type (Rubidium Atomic Clock and CSAC, Cesium Atomic Clock, and Hydrogen Maser Atomic Clock), and Application (Space and Military/Aerospace, Scientific and Metrology Research, Telecom and Broadcasting, and Other Applications)**

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## **Abstracts**

The North America atomic clock market is expected to grow from US\$ 177.37 million in 2022 to US\$ 259.97 million by 2028. It is estimated to grow at a CAGR of 6.6% from 2022 to 2028.

Increasing Need for a High Precision Atomic Clock in Aerospace and Military is Driving the North America Atomic Clock Market

The North America atomic clock market 's growth is mainly attributed to the increasing need for a high precision atomic clock in the aerospace and military sectors. Atomic clocks are flown on Global Positioning System (GPS) satellites to ensure a precise one-way range measurement for the user to maintain the transmitted GPS signal's phase precision. When uploads of time signals are temporarily inaccessible from the GPS ground station to the satellite constellation, these clocks often act as flywheels to maintain GPS synchronization. Recent technological improvements in the GPS atomic clocks demonstrate the power of Precise Time and Time Interval (PTTI) for the warfighter. For rubidium clocks flown on GPS Block II Replenishment (IIR), there is much greater stability than those on GPS Block II / IIA. With the improved clocks, the range error is almost halved. Such varying accuracy improvements allow a GPS receiver to enhance aerospace and military positioning and time outputs

proportionately. In June 2022, Thales and SYRLINKS, a specialist in satellite radiocommunications, radionavigation systems and miniature atomic clocks collaborated together to develop the next-gen atomic clocks for civil and defence applications. Similarly in February 2022, The Defense Advanced Research Projects Agency of the United States Department of Defense announced its plans to develop a 100 times more accurate atomic clock for a range of air, land, and sea platforms. The agency aims to develop an alternative to the GPS satellite-based atomic clock that provides the timing accuracy of a nanosecond for platforms such as sensors, aircraft, ships, and artillery. These initiatives are helping to grow the North America atomic clock market.

## North America Atomic Clock Market Overview

The most accurate atomic clock in the world is housed at the National Institute of Standards and Technology (NIST), the US. This clock is so accurate that if it started counting at the time of the big bang, i.e., 14 billion years back, it would be off today by less than a second. The presence of key atomic clock providers—such as Microsemi, Frequency Electronics, Stanford Research Systems, and Excelitas Technologies—and prime satellite communication providers—such as Honeywell International, Inc., General Dynamics Corporation, L3 Harris Corporation, and Hughes Network Systems LLC—is a main factor driving the market in North America. In May, 2022, Microchip Technology Inc. announced its Precise Time Scale System, that is traceable to Universal Coordinated Time (UTC) with complete control over the time source that their infrastructure depends on. The Precise Time Scale System is capable of providing timing accuracies. The core products integrated into the system include a Cesium atomic Clock Primary Frequency Standard and an Active Hydrogen Maser which provide accurate and stable frequencies. The Defense Advanced Research Projects Agency, a research and development agency of the United States Department of Defense is focusing on the developments of miniaturized atomic clocks and chip-scale atomic clocks with 1000x performance improvements for future applications. Further, the upcoming advanced automotive technologies such as self-driving cars are likely to rely on the combination of local sensing and GPS signals for navigation. Any improvement in GPS accuracy would allow companies to accelerate the developments and rollout of autonomous cars, integrated with atomic clocks. Such organic and inorganic developments are likely to support the North America atomic clock market growth in the coming years.

## North America Atomic Clock Market Revenue and Forecast to 2028 (US\$ Million)

## North America Atomic Clock Market Segmentation

The North America atomic clock market is segmented into type, application, and country.

Based on type, the North America atomic clock market is segmented into rubidium atomic clock and CSAC, cesium atomic clock, and hydrogen maser atomic clock. In 2022, the rubidium atomic clock and CSAC segment registered a largest share in the North America atomic clock market.

Based on application, the North America atomic clock market is segmented into space and military/aerospace, scientific and metrology research, telecom and broadcasting, and other applications. In 2022, space and military/aerospace segment registered a largest share in the North America atomic clock market.

Based on country, the North America atomic clock market is segmented into the US, Canada, and Mexico. In 2022, the US segment registered a largest share in the North America atomic clock market.

AccuBeat Ltd; Excelitas Technologies Corp; IQD Frequency Products Ltd; Leonardo SpA; Microchip Technology Inc; Orolia; Oscilloquartz SA; Stanford Research Systems Inc; and Tekron International Ltd are the leading companies operating in the North America atomic clock market.

## Contents

### 1. INTRODUCTION

- 1.1 Study Scope
- 1.2 The Insight Partners Research Report Guidance
- 1.3 Market Segmentation
  - 1.3.1 North America Atomic Clock Market – By Type
  - 1.3.2 North America Atomic Clock Market – By Application
  - 1.3.3 North America Atomic Clock Market- By Country

### 2. KEY TAKEAWAYS

### 3. RESEARCH METHODOLOGY

- 3.1 Coverage
- 3.2 Secondary Research
- 3.3 Primary Research

### 4. NORTH AMERICA ATOMIC CLOCK MARKET LANDSCAPE

- 4.1 Market Overview
- 4.2 North America PEST Analysis
- 4.3 Ecosystem Analysis
- 4.4 Expert Opinion

### 5. NORTH AMERICA ATOMIC CLOCK –MARKET DYNAMICS

- 5.1 Market Drivers
  - 5.1.1 Increasing Need for a High Precision Atomic Clock in Aerospace and Military
  - 5.1.2 High Demand from Metrology Station Owing to a Time-Sensitive Applications
- 5.2 Market Restraints
  - 5.2.1 High Cost and Complexities Associated with Atomic Clocks
- 5.3 Market Opportunities
  - 5.3.1 Next-Generation Chip-Scale Atomic Clocks (CSACs)
  - 5.3.2 Emerging Digital Infrastructure and 5G Base Stations
- 5.4 Future Trends
  - 5.4.1 Atomic Clocks based on Optical Lattices of Strontium, Ytterbium and Gadolinium

Atoms

5.5 Impact Analysis of Drivers and Restraints

## **6. ATOMIC CLOCK MARKET – NORTH AMERICA ANALYSIS**

6.1 North America Atomic Clock Market Overview

6.2 North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

## **7. NORTH AMERICA ATOMIC CLOCK MARKET ANALYSIS – BY TYPE**

7.1 Overview

7.2 North America Atomic Clock Market, By Type (2021 and 2028)

7.3 Rubidium Atomic Clock and CSAC

7.3.1 Overview

7.3.2 Rubidium Atomic Clock and CSAC: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

7.4 Cesium Atomic Clock

7.4.1 Overview

7.4.2 Cesium Atomic Clock: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)

7.5 Hydrogen Maser Atomic Clock

7.5.1 Overview

7.5.2 Hydrogen Maser Atomic Clock: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)

## **8. NORTH AMERICA ATOMIC CLOCK MARKET ANALYSIS – BY APPLICATION**

8.1 Overview

8.2 North America Atomic Clock Market, By Application (2021 and 2028)

8.3 Space and Military/Aerospace

8.3.1 Overview

8.3.2 Space and Military/Aerospace Research: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)

8.4 Scientific and Metrology Research

8.4.1 Overview

8.4.2 Scientific and Metrology Research: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

8.5 Telecom and Broadcasting

8.5.1 Overview

8.5.2 Telecom and Broadcasting: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

8.6 Other Applications

8.6.1 Overview

8.6.2 Other Applications: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

## **9. NORTH AMERICA ATOMIC CLOCK MARKET – COUNTRY ANALYSIS**

9.1 Overview

9.1.1 North America: Atomic Clock Market, by Key Country

9.1.1.1 US: Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

9.1.1.1.1 US: Atomic Clock Market, by Type

9.1.1.1.2 US: Atomic Clock Market, by Application

9.1.1.2 Canada: Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

9.1.1.2.1 Canada: Atomic Clock Market, by Type

9.1.1.2.2 Canada: Atomic Clock Market, by Application

9.1.1.3 Mexico: Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

9.1.1.3.1 Mexico: Atomic Clock Market, by Type

9.1.1.3.2 Mexico: Atomic Clock Market, by Application

## **10. INDUSTRY LANDSCAPE**

10.1 Overview

10.2 Market Initiative

10.3 New Product Development

10.4 Merger and Acquisition

## **11. COMPANY PROFILES**

11.1 AccuBeat Ltd

11.1.1 Key Facts

11.1.2 Business Description

11.1.3 Products and Services

11.1.4 Financial Overview

11.1.5 SWOT Analysis

11.1.6 Key Developments

11.2 Excelitas Technologies Corp

11.2.1 Key Facts

- 11.2.2 Business Description
- 11.2.3 Products and Services
- 11.2.4 Financial Overview
- 11.2.5 SWOT Analysis
- 11.2.6 Key Developments
- 11.3 IQD Frequency Products Ltd
- 11.3.1 Key Facts
- 11.3.2 Business Description
- 11.3.3 Products and Services
- 11.3.4 Financial Overview
- 11.3.5 SWOT Analysis
- 11.3.6 Key Developments
- 11.4 Leonardo SpA
- 11.4.1 Key Facts
- 11.4.2 Business Description
- 11.4.3 Products and Services
- 11.4.4 Financial Overview
- 11.4.5 SWOT Analysis
- 11.4.6 Key Developments
- 11.5 Microchip Technology Inc
- 11.5.1 Key Facts
- 11.5.2 Business Description
- 11.5.3 Products and Services
- 11.5.4 Financial Overview
- 11.5.5 SWOT Analysis
- 11.5.6 Key Developments
- 11.6 Orolia
- 11.6.1 Key Facts
- 11.6.2 Business Description
- 11.6.3 Products and Services
- 11.6.4 Financial Overview
- 11.6.5 SWOT Analysis
- 11.6.6 Key Developments
- 11.7 Oscilloquartz SA
- 11.7.1 Key Facts
- 11.7.2 Business Description
- 11.7.3 Products and Services
- 11.7.4 Financial Overview
- 11.7.5 SWOT Analysis

- 11.7.6 Key Developments
- 11.8 Stanford Research Systems Inc
  - 11.8.1 Key Facts
  - 11.8.2 Business Description
  - 11.8.3 Products and Services
  - 11.8.4 Financial Overview
  - 11.8.5 SWOT Analysis
  - 11.8.6 Key Developments
- 11.9 Tekron International Ltd
  - 11.9.1 Key Facts
  - 11.9.2 Business Description
  - 11.9.3 Products and Services
  - 11.9.4 Financial Overview
  - 11.9.5 SWOT Analysis
  - 11.9.6 Key Developments

## **12. APPENDIX**

- 12.1 About The Insight Partners
- 12.2 Word Index



## List Of Tables

### LIST OF TABLES

Table 1. North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

Table 2. US: Atomic Clock Market, by Type –Revenue and Forecast to 2028 (US\$ Million)

Table 3. US: Atomic Clock Market, by Application –Revenue and Forecast to 2028 (US\$ Million)

Table 4. Canada: Atomic Clock Market, by Type –Revenue and Forecast to 2028 (US\$ Million)

Table 5. Canada: Atomic Clock Market, by Application –Revenue and Forecast to 2028 (US\$ Million)

Table 6. Mexico: Atomic Clock Market, by Type –Revenue and Forecast to 2028 (US\$ Million)

Table 7. Mexico: Atomic Clock Market, by Application –Revenue and Forecast to 2028 (US\$ Million)

Table 8. List of Abbreviation

## List Of Figures

### LIST OF FIGURES

- Figure 1. North America Atomic Clock Market Segmentation
- Figure 2. North America Atomic Clock Market Segmentation – By Country
- Figure 3. North America Atomic Clock Market Overview
- Figure 4. Rubidium Atomic Clock and CSAC Type Segment held the Largest Share
- Figure 5. Space and Military/Aerospace Application Segment held the Largest Share
- Figure 6. US to Show Great Traction During Forecast Period
- Figure 7. North America: PEST Analysis
- Figure 8. Expert Opinion
- Figure 9. North America Atomic Clock Market Impact Analysis of Drivers and Restraints
- Figure 10. North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)
- Figure 11. North America Atomic Clock Market Revenue Share, by Type (2021 and 2028)
- Figure 12. Rubidium Atomic Clock and CSAC: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)
- Figure 13. Cesium Atomic Clock: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)
- Figure 14. Hydrogen Maser Atomic Clock: North America Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)
- Figure 15. North America Atomic Clock Market Revenue Share, by Application (2021 and 2028)
- Figure 16. Space and Military/Aerospace Research: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)
- Figure 17. Scientific and Metrology Research: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)
- Figure 18. Telecom and Broadcasting: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)
- Figure 19. Other Applications: North America Atomic Clock Market– Revenue and Forecast to 2028 (US\$ Million)
- Figure 20. North America: Atomic Clock Market, by Key Country — Revenue (2021) (US\$ Million)
- Figure 21. North America: Atomic Clock Market Revenue Share, by Key Country (2021 and 2028)
- Figure 22. US: Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)
- Figure 23. Canada: Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

Figure 24. Mexico: Atomic Clock Market – Revenue and Forecast to 2028 (US\$ Million)

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