



Company Presentation



The Frequency Control Expert for over 20 Years





Who we are



- ✘ **“AXTAL”** stands for **“Advanced XTAL Products”**, where **“XTAL”** is a common abbreviation of “crystal”.
- ✘ **Founded in November 2003** by Bernd Neubig and Brigitte Neubig as fully privately owned company. Since 2023 the AXTAL GmbH is an independent subsidiary of **Q-Tech Corporation**, a US-based leading supplier of high-reliability crystal oscillators
- ✘ **Core Business** comprises advanced Frequency Control Products (FCP), i.e. mainly Crystal & SAW Oscillators and Frequency & Timing Modules. All products are ITAR free.
- ✘ **Main Product Focus** is on High-Reliability Oscillators and Frequency Control Modules with high requirements for environmental conditions, ultra-low noise performance, very high stability and frequency generation up into the GHz range for applications like microwave communication, test equipment, radar, military, aerospace and space.
- ✘ **Full Value Chain** includes R&D, design, manufacturing, screening and testing of our products from samples to production quantities completely in-house.
- ✘ **Extended Product Portfolio** includes quartz crystals & crystal filters for high-reliability applications and atomic frequency standards, which are sourced from our contract partners.

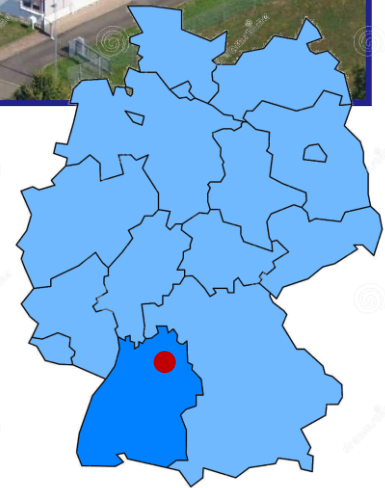


Where we are



AXTAL GmbH

Facility & Administration:
(Billing & shipping address)
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D-74821 Mosbach
Germany 



+49 6261 939834



contact@axtal.com "General"



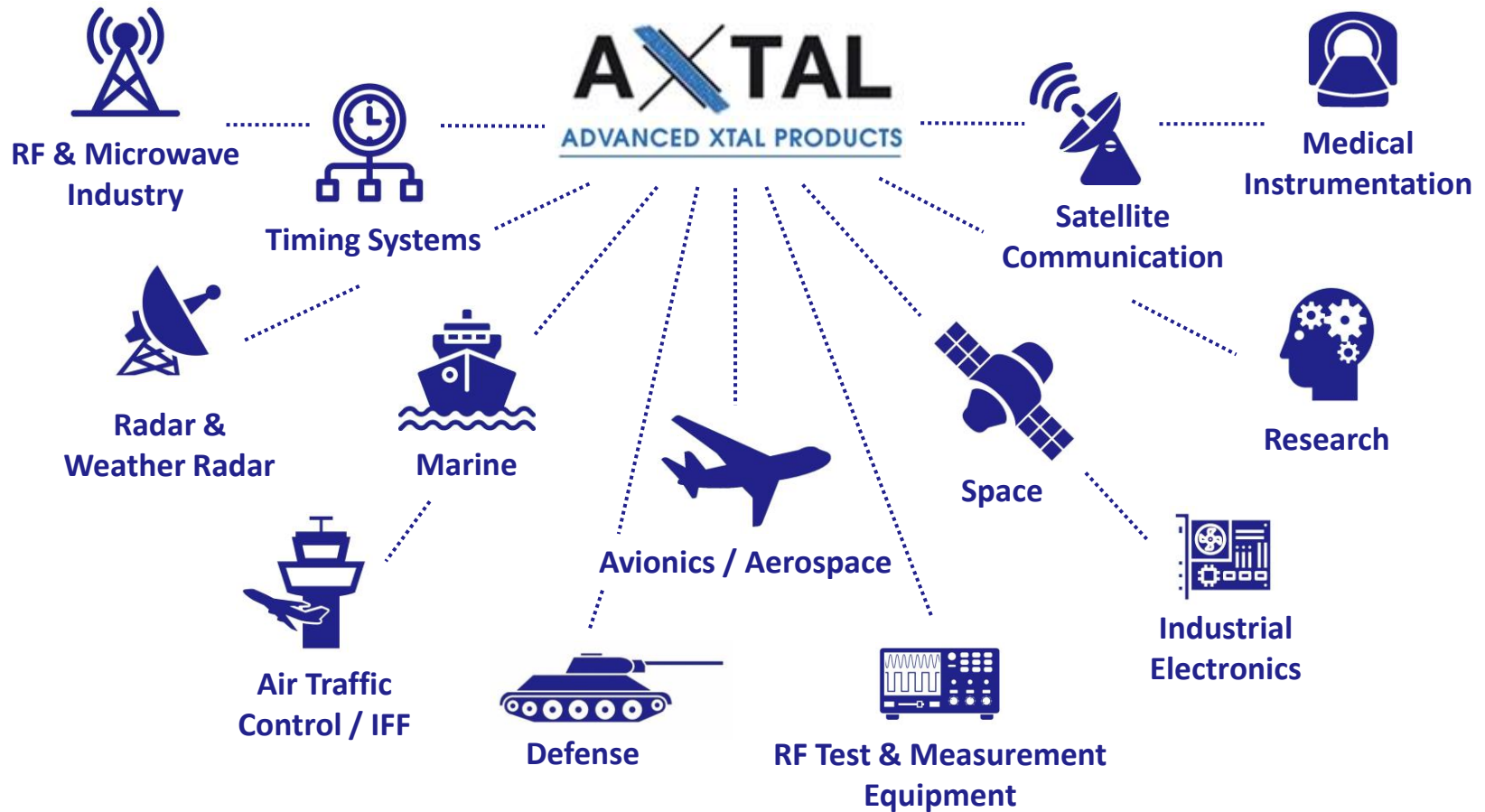
+49 6261 939836



www.axtal.com



Markets served





Main countries



Sales Representatives – See our Website



Quality Management



- ✗ Since 2008: Quality management system in accordance with **ISO 9001:2015**, certified by TUEV SUED.
- ✗ Since 2024: Quality management system in accordance with **EN 9100:2018** (AS 9100), certified by TUEV SUED.
- ✗ AXTAL Quality System includes also:
 - ✗ **Extensive process control** for R&D, manufacturing and sales
 - ✗ **100% Incoming inspection** of all quality-critical components
 - ✗ **Extended testing** of quartz resonators incl. passive & active pre-aging
 - ✗ **Full traceability** of all test & measurement results
 - ✗ **100% Final test** of all key & critical parameters
 - ✗ **Workmanship** to J-STD-001, IPC-A-610 Class 3 and ESA ECSS standards



Customer Audits

(not complete)

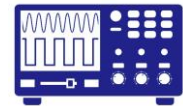




Testing & Qualification



- ✘ **Inhouse Testing** of all electrical & environmental tests
- ✘ **Qualification Testing** to IEC 60679-4, MIL-PRF-55310, ESCC or Customer standards
- ✘ **AXTAL Test Capabilities – Electrical:**
 - ✘ **Crystal Testing** with Saunders, Kolinker and AXTAL Network Analyzer System
 - ✘ **Frequency Stability** over various parameters up to 20 GHz
 - ✘ **Output Waveform & Spectrum** up to 26 GHz
 - ✘ **Phase Noise** with R&S FSWP & FSPN and Agilent E5052B up to 26 GHz
 - ✘ **Short-term Stability** (ADEV) with Microchip 53100A down to 1E-18
 - ✘ **Long-term Stability** (Aging) measured against GPS-disciplined Atomic Clock
 - ✘ **G-Sensitivity** & Phase Noise under vibration (random & sine) 5 ~ 6000 kHz
 - ✘ **Temperature Testing** -55°C to +125°C
- ✘ **AXTAL Test Capabilities – Environmental:**
 - ✘ **Vibration Testing:** Mechanical Shock, Random & Sine
 - ✘ **Temperature Testing:** Thermal Shock, Storage & Burn-in -55°C to +150°C
 - ✘ **Vacuum Testing**
 - ✘ **Leak Testing**





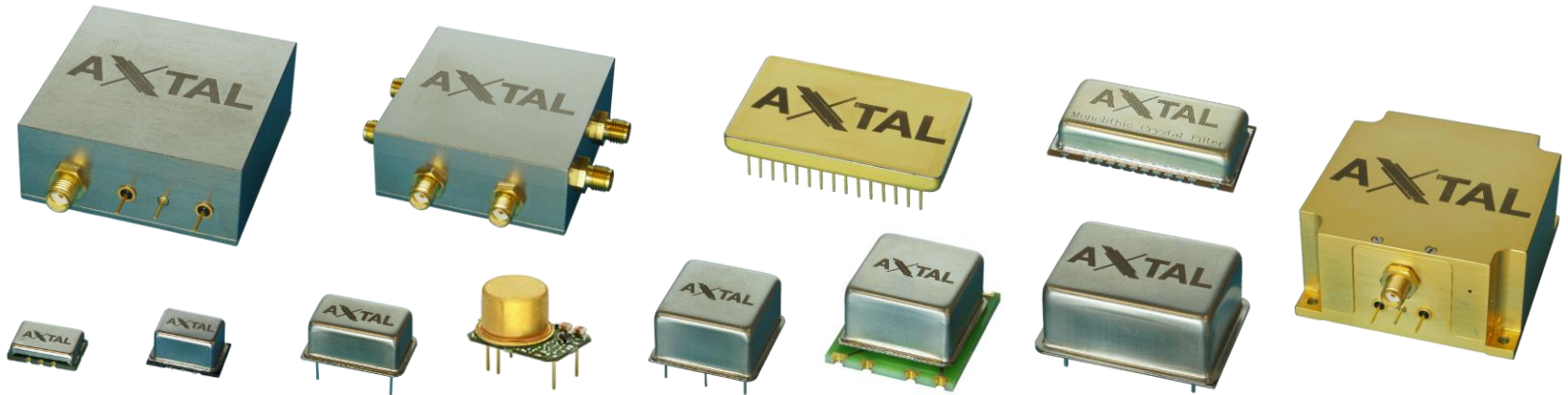
Production Environment





Product Overview

SPXO **VCXO** **TCXO** **OCXO** **PLXO** **SAW** **Space**
Masterclocks **Frequency References** **Atomic Clocks**



Expert for customized oscillators and modules

Ultra-low noise & Very high stability

Wide frequency range up to 10 GHz

Various packages: THD, SMD, Connectorized and 19" Rack

Screening & Inspection IAW MIL-PRF-55310



OCXO

Product Overview



Miniature 9x14 mm Package

- ✘ Smallest OCXO – Hermetically-sealed
- ✘ ± 5 ppb, -40°C to $+85^{\circ}\text{C}$



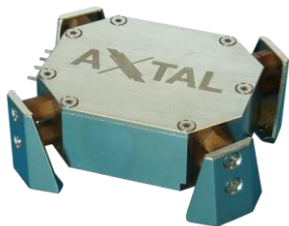
Ultra-High Stability Double OCXO

- ✘ Eurocase 36x27 mm Package
- ✘ ± 0.05 ppb, -20°C to $+70^{\circ}\text{C}$



Ultra-Low Noise

- ✘ Supreme close-in phase noise
- ✘ Noise floor down to -185 dBc/Hz

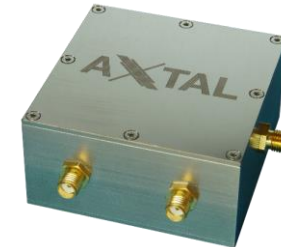


Vibration-isolated

- ✘ G-Sensitivity down to 0.001 g^2/Hz
- ✘ Noise floor down to -180 dBc/Hz
- ✘ Functional profile up to 25 g RMS
- ✘ Customized Absorbers

Multiplied Ultra-Low Noise

- ✘ Up to 7 GHz
- ✘ Multiple Outputs
- ✘ Fully customizable



Low Power Fast Warm-up

- ✘ Warm-up 60 sec
- ✘ Power Consumption < 300 mW
- ✘ Small Size



TCXO

Product Overview



Miniature SMD Packages

- ✗ 5x3.2 mm & 7x5 mm
- ✗ High Stability down to ± 50 ppb
- ✗ Low noise & Low g-Sensitivity

High Stability

- ✗ Down to ± 50 ppb, $-40 \sim +85^{\circ}\text{C}$
- ✗ Various packages available

Ultra-Low Noise

- ✗ Low close-in phase noise
- ✗ Noise floor down to -180 dBc/Hz
- ✗ Ultra-low phase jitter down to 10 fs

Very wide temperature range

- ✗ Up to $-55 \sim +125^{\circ}\text{C}$
- ✗ Various packages available



High frequencies

- ✗ Up to 8 GHz using PLL or Multiplication
- ✗ Low phase noise & low phase jitter
- ✗ Various packages available

Lowest Vibration Sensitivity

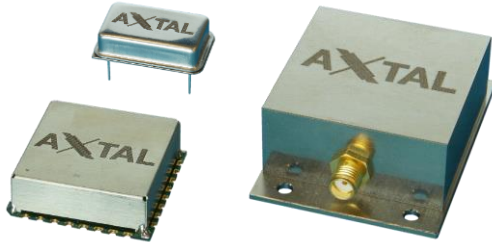
- ✗ G-Sensitivity down to 0.2 ppb/g
- ✗ Noise floor down to -180 dBc/Hz
- ✗ Functional profile up to 25 g RMS





Modules & Space

Product Overview

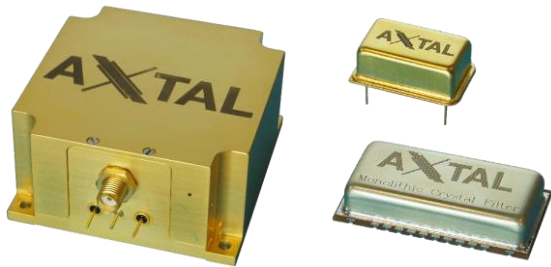
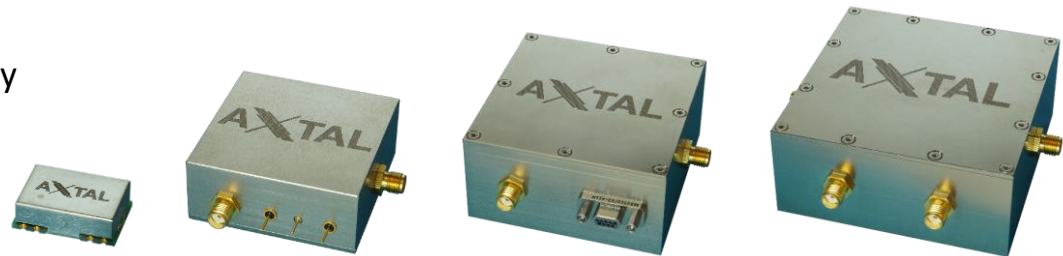


GHz Crystal-Controlled Sources

- ✘ Various Gated Oscillators for Air Traffic Control and IFF
- ✘ PLL, Frequency Multiplication and SAW
- ✘ All stability classes up to 10 GHz

PLL Oscillator Modules

- ✘ SPXO – TCXO – OCXO Stability
- ✘ Programmable models
- ✘ Multiple outputs
- ✘ Fully customizable



Space & New Space

- ✘ SPXO – VCXO – TCXO – OCXO – Monolithic Crystal Filter
- ✘ MIL-PRF-55310 Level “S” and High Radiation Hardness
- ✘ Broad New Space Portfolio
- ✘ ESA EPPL Listed OCXO AXIOM6060
- ✘ Heritage: GEO, NCLE Moon Mission, LaRa/ExoMars etc.



Frequency References & Distribution

Product Overview



Masterlocks

- ✘ Masterlocks for the most demanding Timing and Frequency Generation Systems
- ✘ Fully-customized in acc. with your requirements
- ✘ State-of-the-art Performance & Technology

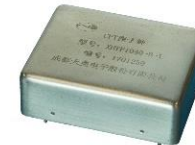


Frequency Distribution

- ✘ Frequency References: OCXO – Rubidium – GPS-disciplined
- ✘ Ultra-Low Noise & Very High Stability
- ✘ Low Noise Distribution Amplifier up to 16 outputs

Atomic Clocks

- ✘ Manufacturer: ELECSN “Spaceon”
- ✘ Miniature CPT Atomic Clock
- ✘ Rubidium Clocks



AXTAL Customers



CHINA AEROSPACE SCIENCE AND TECHNOLOGY CORPORATION (CASC)



ROHDE & SCHWARZ

ADVANTEST

CEIC 中国电科



indra





AXTAL Website



www.axtal.com

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- ✕ Download Catalog and Datasheets
- ✕ Technical Notes & Archive
- ✕ Check out where you can meet us on Trade Shows & Conferences

WELCOME TO THE EXPERT FOR FREQUENCY CONTROL AND PIEZO SENSORS

OUR PRODUCTS		
<p>CRYSTAL OSCILLATORS</p> <ul style="list-style-type: none"> ✕ Packaged Xtal Oscillators / Clocks (SPXO) ✕ Voltage Controlled Xtal Oscillators (VCXO) ✕ Temp.-Compen. Xtal Oscillators (TCXO) ✕ Oven Controlled Xtal Oscillators (OCXO) ✕ SAW Oscillators (PSO, VCSO, OCSO) ✕ Vibration Insensitive Oscillators ✕ Oscillators for Aerospace & Defence ✕ Oscillators for Space Applications 	<p>OSCILLATOR MODULES</p> <ul style="list-style-type: none"> ✕ Modules for Aerospace & Defence ✕ Phase-Locked Oscillator Modules ✕ GHz Crystal-Controlled Sources ✕ Gated Crystal Oscillators for IFF ✕ Masterclocks 	<p>FREQUENCY REFERENCE UNITS & DISTRIBUTION</p> <ul style="list-style-type: none"> ✕ OCXO Frequency References ✕ Miniature Atomic Clock ✕ Rubidium Atomic Clocks ✕ GPS-disciplined Oscillators ✕ Distribution Amplifiers
<p>MISCELLANEOUS PRODUCTS</p> <ul style="list-style-type: none"> ✕ Precision Crystals (Crown) ✕ Quartz Crystal Units for Space Application ✕ Crystal Filters for Space Application ✕ Evaluation Boards ✕ Frequency Counter Modules 	<p>PRODUCT SEARCH</p> <ul style="list-style-type: none"> ✕ Oscillator Search ✕ Other Products ✕ Catalog ✕ Legacy Products 	<p>Q-TECH PRODUCTS</p> <ul style="list-style-type: none"> ✕ Q-Tech Corporation ✕ Q-Tech Product Overview ✕ Q-Tech Product Search

