# Advanced Control Systems for Boeing 787 Dreamliner

## Hamilton Sundstrand's (UTAS) TTP-Based Communication Platform



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**www.tttech.com/aerospace**

> We are proud that Hamilton Sundstrand has selected TTTech to supply the TTP data bus solution for Boeing's 787 Dreamliner. Hamilton Sundstrand's decision demonstrates once more our technology's leading position for safety-critical systems in the aerospace industry.

Kurt Doppelbauer
Vice President Sales
TTTech Computertechnik AG
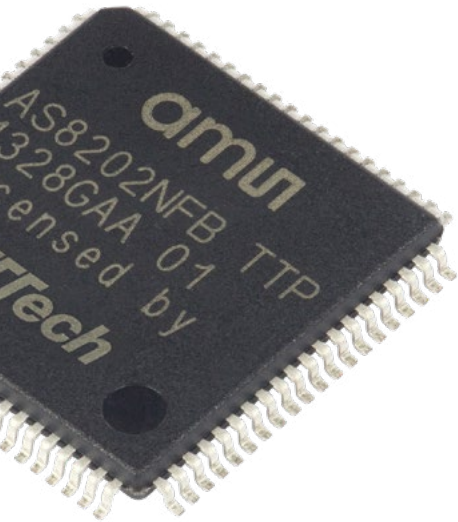
Boeing 787 Dreamliner is a super-efficient commercial airplane that is available in three varieties, carrying up to 330 passengers on routes of up to 8,500 nautical miles. In addition to bringing big-jet ranges to mid-size airplanes, the airliner will use 20 percent less fuel for comparable missions than today's similarly sized airplanes and will travel at speeds similar to today's fastest wide bodies.



As much as 50 percent of the primary structure of the 787 will be made of composite materials. An open architecture is at the heart of the 787's systems, which offers increased functionality. Health-monitoring systems allow the airplane to self-monitor and report maintenance requirements to ground-based computer systems. Advances in engine technology will contribute as much as 8 percent of the increased efficiency of the new airplane.



Hamilton Sundstrand (since 2012 UTC Aerospace Systems and since 2018 Collins Aerospace) is among the largest global suppliers of technologically advanced aerospace products. The company designs and manufactures aerospace systems for commercial, regional, corporate and military aircraft. Hamilton Sundstrand delivers electric and environmental control systems on the Boeing 787 Dreamliner. With the aim to reduce the total lifecycle cost for its Common Electronic Architecture (CEA), Hamilton Sundstrand selected TTTech to support the development of a TTP-based data communication platform.

> **"**
> We are very pleased to work with TTTech. The TTP protocol provides Hamilton Sundstrand flexibility in designing distributed electronic systems. By taking advantage of TTP's modular nature, we can more effectively integrate our systems, improve tolerance to system upgrades, and better manage obsolescence. **"**

Luiz Andrade
Chief Engineer Electronic Products Engineering
Hamilton Sundstrand

TTTech is the leading supplier of technology and software products in the field of deterministic networking and embedded platforms. The Time-Triggered Protocol (TTP) is a key technology for tight digital integration of safety-critical systems in more electric aircraft. TTP enables highly reliable distributed computing and networking for modern, more efficient aerospace systems at lower total lifecycle costs within shorter time-to-market.

TTP is a fault-tolerant deterministic protocol that involves continuous communication of all connected nodes via redundant data buses at predefined periods of time. All events are safely processed according to a schedule, eliminating the dangers of data collision. TTP has effective fault handling mechanisms to provide enhanced levels of reliability, availability and safety.

TTTech's mature network solution offers a maximum level of fault tolerance, safety and availability. In addition, TTP allows greater modularity and flexibility than conventional communication systems. TTP-based systems require less wiring, and consequently weigh less than conventional systems. As the core of the data communication platform for electric and environmental control systems on the Boeing 787 Dreamliner, TTP is able to support applications that must effectively monitor operational consistency and detect errors in order to provide the required level of reliability in Hamilton Sundstrand's CEA.



▶ CUSTOMER / PROJECT

Boeing 787 Dreamliner – TTP-based communication platform

▶ CHALLENGE

The customer wanted a communication platform able to support applications that effectively monitor operational consistency and detect errors to provide a required level of reliability.

▶ SOLUTION

TTTech's TTP is used as the core of the data communication platform for electric and environmental control systems on the Boeing 787, ensuring fault-tolerance, safety and availability.

◀ AT A GLANCE

# Reaching for the Sky with Certified and Safe Solutions

### About TTTech Computertechnik AG

TTTech Aerospace provides deterministic embedded network and platform solutions for aerospace and space applications. Its proven solutions increase safety, fault-tolerance and availability and have reached over 600 million flight hours in demanding aerospace safety-critical applications.

TTTech Aerospace has been engaged in the space market since 2000. With TTEthernet, it offers a standardized (SAE AS6802) networking technology with outstanding characteristics. The platform solution's values have been acknowledged by several space agencies and leading industrial partners.

TTTech Aerospace is part of TTTech Computertechnik AG, which operates under the umbrella of the TTTech Group, a globally oriented group of high-tech companies, founded and based in Vienna, Austria.

### About UTC Aerospace Systems (Hamilton Sundstrand)

UTC Aerospace Systems is one of the world's largest suppliers of technologically advanced aerospace and defense products. We design, manufacture and service systems and components and provide integrated solutions for commercial, regional, business and military aircraft, helicopters and other platforms. We are also a major supplier to international space programs.

In 2012, UTC Aerospace Systems was formed by combining two industry leaders, Hamilton Sundstrand and Goodrich, creating an organization with key positions on a wide range of aircraft flying today and substantial content on various UAVs, satellites and ground and naval vehicles.

In 2018, UTC Aerospace Systems and Rockwell Collins combined to form Collins Aerospace. Further information is available at www.utcaerospacesystems.com

### About Boeing

Boeing is the world's leading aerospace company and the largest manufacturer of commercial jetliners and military aircraft combined. Additionally, Boeing designs and manufactures rotorcraft, electronic and defense systems, missiles, satellites, launch vehicles and advanced information and communication systems. The company also provides numerous military and commercial airline support services.

Further information is available at www.boeing.com

### Vienna, Austria – Headquarters

Phone +43 1 585 34 34-0
products@tttech.com

### Japan

Phone +81 52 485-5898
office@tttech.com

### USA

Phone +1 978 933-7979
usa@tttech.com

### China

Phone +86 21 5015 2925-0
china@tttech.com

**TTTech**