

# Rockwell Collins TPR-901-003/021 Transponders



## TPR-901-003/021 Transponders: Meeting worldwide ADS-B mandates

Europe has mandated the carriage and operation of Mode S transponders with specific baseline functionality as a part of the long-range plan to improve airspace capacity, safety and efficiency.

Rockwell Collins TPR-901-003/021 Transponders meet the new Mode S Elementary Surveillance functionality required for 2007 and beyond for operation in Europe. This basic functionality includes:

- 24-bit ICAO aircraft address
- Transponder capability report including SI code capability
- Altitude reporting
- Automatic reporting of aircraft identification (Flight ID)
- Flight status (airborne/on the ground)

Rockwell Collins offers the TPR-901-003 transponder for all Boeing aircraft and the TPR-901-021 for all Airbus aircraft in order to meet all the current and future surveillance requirements for the airline or operator. This capability includes the Elementary Surveillance mandate (March 31, 2007) along with the Enhanced Surveillance mandate (March 31, 2007) and DO-260 Extended Squitter.

Mode S Enhanced Surveillance builds upon the concept of Elementary Surveillance and consists of the extraction of further aircraft parameters known as Downlink of Airborne Parameters (DAPs). This facilitates an increase in the safety and efficiency of the ATM operations.

In addition, TPR-901-003 offers Extended Squitter (ADS-B) capability per RTCA DO-181C. It is the only transponder offered today that is forward and backward compatible with ARINC 718A and the existing ARINC 718-4 installations (dual use pins).

## SURVEILLANCE REQUIREMENTS GAINING MOMENTUM

Many countries and regions are now using ADS-B Out (DO-260) to provide separation services (Australia, Hudson Bay, Canada) or demonstrate and fix requirements for ADS-B Out implementation (Europe CASCADE, SE Asia). ADS-B is particularly appealing in those areas where there is none or limited radar coverage. The expected first application is to provide surveillance coverage in areas where there is no SSR, limited SSR coverage, or where terrain impedes adequate SSR surveillance coverage. Current and expected mandates are in place: Canada Hudson Bay – today, Australia Upper Airspace – today, European CASCADE ADS-B Out Pioneer Trials – today, with a Single European Sky Mandate being planned for 2012 forward fit, and 2015 end of the retrofit period. The U.S. FAA is also expected to issue an ADS-B Out mandate in early 2010, with mandate completion by 2020.

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Current surveillance trials and early implementations are relying on the existing aircraft capability, which is based on the RTCA standard called out in publication DO-260. DO-260 has now been superseded by DO-260A change 2. The ADS-B TSO C166 has also been superseded by TSO C166a. However today, the primary implementation of ADS-B Out in the Air Transport segment is DO-260. The Airbus A380 is DO-260A and the B787 at entry into service will also be DO-260A since these came into service after DO-260A was published.

The ADS-B Out standards bodies continue to work on ADS-B Out capabilities and they are currently completing DO-260B. We believe that all future mandates (Single European Sky ADS-B, FAA ADS-B NPRM, etc) will be based on DO-260B. In production and out-of-production aircraft will require updating or replacement of equipment required to meet the new ADS-B Out standard. Those systems requiring evaluation for compliance to DO-260B: GPS sensors (TSO C129a, TSO C145a), Transponders, ATC Control Panels, and aircraft wiring to comply with ARINC 718A-2 aircraft interface standard.

#### OUR APPROACH

Rockwell Collins believes that a measured and coordinated approach must be taken by the industry in order for the implementation to be cost-effective. This approach embodies regulatory maturity and is solid technically for effective aircraft implementations. RTCA SC186 has finished the Surveillance Transmit Processing MOPS (STP). The STP MOPS validated that future airspace surveillance requirements will require that the mandates be based on the currently being completed DO-260B. DO-260B is expected to be published by the middle of 2009 and approved by early 2010.

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Rockwell Collins delivers smart communication and aviation electronics solutions to customers worldwide. Backed by a global network of service and support, we stand committed to putting technology and practical innovation to work for you whenever and wherever you need us. In this way, working together, we build trust. Every day.

Rockwell Collins is a leader in implementing surveillance solutions and is the first avionics manufacturer (March 2009) to certify a DO-260A Change 2 (TSO C166a) certified transponder – the BRS TDR-94D/409. Rockwell Collins will deliver a certified DO-260A Change 2 TPR-901-004 to Boeing for implementation on the B747-8 at entry into service in 2010. We continue to participate in ADS-B standards bodies (RTCA, ICAO, Eurocae) and expect to implement DO-260B in the TPR-901 and the TDR-94 in time to meet the expected international mandates.

Rockwell Collins is firmly committed to implementing DO-260A in the TPR-901 to meet the operating and mandatory requirements of our airline customers.

#### KEY FEATURES

- DO-181A, change 2.0 software
- DO-181C
  - Elementary surveillance
  - Enhanced surveillance
  - Extended squitter (DO-260)
- Complies with ICAO ACAS requirements
- Complies with EUROCAE ED-86, Internal Airborne Data Link Processor (ADLP)
- Level 3 transponder, upgradeable to Level 4 and Level 5 with software only
- Substantial computing and interface growth

#### SPECIFICATIONS

Size	4 MCU: 7.6" H X 4.9" W X 12.8" D (193 mm H x 125 mm W x 325 mm D)
Weight	13.8 lbs (6.3 kg)
Power required	115 V ac, 400 Hz, 45VA

**SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.**

#### For more information contact:

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