

RTMU Real-time Management Unit

A Real-time Monitoring System for the ARJ21 Aircraft

The Teledyne Real-time Management Unit (RTMU) provides a state-of-the-art hardware and software solution for data acquisition, aircraft condition monitoring and data recording. Used in conjunction with the Teledyne GroundLink® Comm+ system, the RTMU records and downlinks a continuous stream of raw data that can be used for aircraft system condition monitoring, performance trending and operational quality assurance.

The RTMU acquires and monitors the aircraft parameters. It can generate and downlink reports via ACARS in real-time to notify the airline operator and/or the aircraft manufacturer when parameters are outside of the norm. The operator/manufacturer can then take the appropriate action in a timely manner, to support the operational safety and efficiency of the aircraft.

The RTMU also records and downlinks raw data after the aircraft has landed, via Teledyne's GroundLink® Comm+ system. This data can be used for aircraft system condition monitoring, performance trending and operational quality assurance.

The RTMU architecture is based on proven data acquisition and management technology that has been used and certified on multiple Boeing and Airbus aircraft. The RTMU combines the fully-programmable Aircraft Condition Monitoring System (ACMS) processing capability of the Teledyne Data Management Unit with the internal recording capabilities of the Teledyne Quick Access Recorder.



RTMU Key Benefits:

- **ACMS Programming Capabilities:** Teledyne Controls' PC Based Application Generation Software (AGS) provides a mechanism for operators to fully customize their ACMS application software. The AGS generated application software is uploadable and allows the users to maintain and modify their ACMS applications on the aircraft, resulting in significant time and cost savings. Using AGS, operators can customize the aircraft parameters they want to acquire, monitor, and record; modify display screens (CDU/MCDU); customize report format and content; and establish report generation conditions.
- **Partitioned ACMS Applications:** The ability to create 'Partitioned Applications' (via AGS) allows the operator to maintain a set of ACMS functions (reports, recording map, trigger logic) that are 'partitioned' from the customized ACMS functions specific to the airline.
- **ACMS Validation:** To support the aircraft manufacturer and the airlines further in developing customized applications, the Teledyne ACMS Tester software provides a PC-based tool to verify the ACMS functions on a virtual machine prior to the aircraft installation. With the ACMS Tester, users can compose and run scenario files to simulate events, trigger reports and generate recording files.
- **ACMS Report downlink via GroundLink® Comm+ system:** The RTMU features an RS422 interface that transmits ACMS reports to the GroundLink® Comm+ system. With this RS422 interface, non-time-critical reports (such as engine trending monitoring, fuel usage, APU usage, etc.) can be sent via the GroundLink® Comm+ unit and distributed to users via cellular networks, wirelessly and automatically. Users can develop large ACMS reports without the bandwidth constraints of ACARS networks.