

Quick Access Recorder (QAR)

Hardware Background

If your aircraft have a digital flight-data recorder then it is quite possible for you to use downloads from that device for your FDM program. However, FDRs can be difficult to access and the requirement for a download unit (and specialised training) can make this option impracticable for daily (or even weekly) downloads.

Please note that it is not acceptable to use data downloaded from tape-based recorders for routine FDM since these devices are not designed for regular download and their use in this way will almost certainly cause premature failure of the FDR.

If your aircraft are already equipped with optical or card-based recorders then you can safely ignore the rest of this section. Optical QARs have a reputation for poor reliability and slow download but it is probably better to delay any hardware purchase until the need arises (i.e. you start losing too much data or run out of patience waiting for downloads to complete).

Solution Highlights

ATL 'micro' or 'mini' QAR solutions provide a cost effective way for airlines to meet the increasing demand for routine download of raw FDR data for FDM.

These devices are extremely compact and cost just a few thousand dollars each. On most Boeing aircraft, they can simply be plugged in to an existing connector on the flight-deck. For other aircraft, ATL will be able to supply the QARs with the relevant Minor Mods/STCs and/or installation kits.

The 'micro' or 'mini' QAR can fit in locations where other QARs simply can't. It's an excellent selection not only for size, but also weight. At 6.5 oz (less than 185 grams), it can save thousands of pounds of fuel over an aircraft's lifetime when compared to competing full-size (wireless or removable media) QAR solutions typically weighing in at up to 15 Lbs (6.8 Kg).

A European carrier has calculated that, by installing the 'micro' or 'mini' QAR over the competitive, traditionally sized QAR solution, its fleet of 15 regional jets will save over 350,000 Lbs of fuel over 5 years. Installing The 'micro' or 'mini' QAR is not only a financially sound decision; it's also environmentally responsible.

HIGHLIGHTS INCLUDE:

- Quick, Fast and easy to download - no specialist download leads or hardware required.
- Small/Light Weight
- 160 to 3000 Hours Record Time
- Fixed or removable media
- Easy processing
- QARs record continuous date and time - this is a big advantage when trying to match up the flight data with other information
- EASA Minor Modification available for many aircraft types
- Easy to install

Images



L-3 Comm micro QAR (μQAR)



Avionica miniQAR MKIII

Lightest Solution on the Market

The instrument's unique features include a very light structure (6 oz./170 g) with a fixed or removable Compact Flash (CF) memory card and a standard USB 2.0 interface for optional downloads. The QAR records a copy of the data provided to the Flight Data Recorder (FDR) for easy retrieval in Flight Operations Quality Assurance (FOQA) systems. The data stored in the solid state memory can then be transferred into a third-party FOQA/FDM (Flight Data Management) system for analysis.

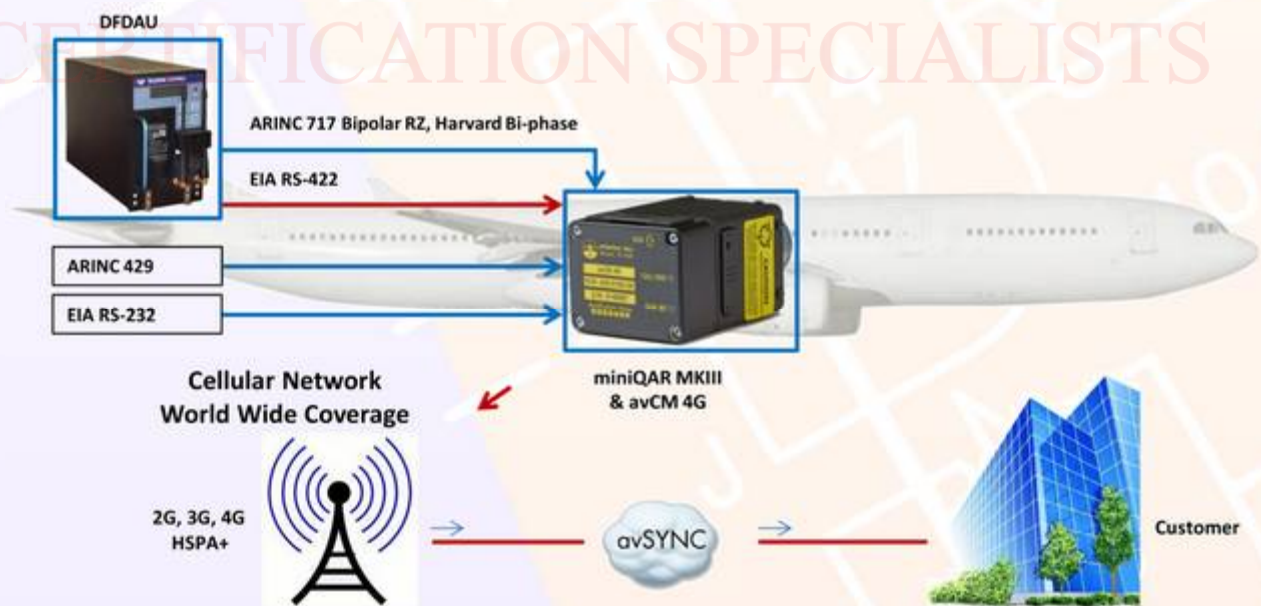
Easy to Install – Reduced Installation Time

Installation time varies based on the aircraft but will be less than 1 man hour reducing with experience.

4G Cellular Communication

For miniQAR, in additions, the 4G Wireless GSE Module can be plugged into via the front HDMI connector and provides 4G cellular communications between the QAR and ground (when the aircraft is parked).

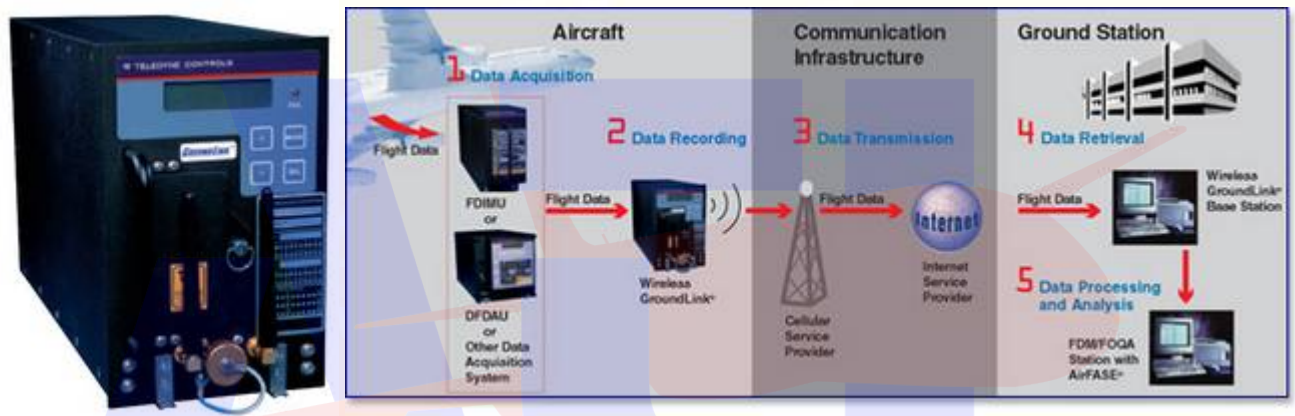
The 4G Wireless GSE module then contacts Avionica's avSYNC services (hosted by the airline or Avionica) over the 4G network and the Internet via VPN tunnel. avSYNC registers the aircraft's presence and determines what data, if any, must be retrieved from (or sent to) the aircraft and provides the appropriate commands to achieve such transfers.



Teledyne WQAR

With Teledyne's WQAR, physical media handling and data loss is virtually eliminated since the system uses wireless cellular technology to fully automate the recording and transmission of aircraft data. The raw data recorded during flight is compressed, encrypted and then securely transmitted via Internet directly to the airline's or Teledyne's ground-based data centre for processing and analysis. With the right data at their fingertips, airlines can not only reduce operating risk and closely monitor safety, but they can also yield additional benefits, such as fuel savings and lower maintenance costs.

In addition to routine data transfer, the WQAR system, with its Download on Demand (DoD) feature, enables airlines to remotely command flight data download whenever they need earlier access to their data, regardless of airport destination, designated hub or gate. The DoD function allows for timely retrieval of critical flight data from almost any airport worldwide so airlines can respond to potential issues in record time.



Teledyne WQAR

Teledyne's WQAR is a proven solution that provides unprecedented data recovery rates close to 100% and immediate access to flight data. Within 15 minutes after aircraft landing, flight data can be processed, versus several days or weeks with manual data retrieval methods.

Teledyne WQAR to be installed in Avionics Bay shelf on new rack, often near the Flight Data Recorder or the Flight Data Acquisition Unit.

L-3 Communications μ QAR and Avionics miniQAR Mk III Features

- Compatible with ARINC 573/717/747 FDRs
- Optional ARINC 429 version with 2 inputs (high or low speed)
- AC and DC versions available
- Optional bi-polar or bi-phase inputs
- Optional data wrapping and data sensing
- Optional USB output from main connector or standard USB jack
- Optional electrical connector configurations
- MTBF > 100,000 hours
- Lightweight at < 6 oz. (170 g)
- Custom configurations
- Compatible with all major FDM analysis tools
- EASA minor modification packages available