

ACARS

Aircraft Communications

Addressing and Reporting System

Data Elements and Message Examples



INTRODUCTION

ARINC maintains a huge worldwide VHF and HF voice network to provide operational radio communications for the aircraft industry. They developed a digital data link for commercial and business jets known as ACARS (Aircraft Communications Addressing and Reporting System). These messages are very structured and there are nearly 100 standard ACARS message formats and a virtually unlimited number of airline-specific company formatted message types.

These messages are typically three ways:

- Ground to aircraft (uplink);
- Aircraft to the ground (downlink);
- Ground to ground.

This document outlines the 'downlink standard OOOI message' specification.

ACARS OOOI Message Specification

- OOOI messages contain Departure (DEP) report and Arrival (ARR) report. The DEP message contains actual OUT, actual OFF times. The ARR message contains actual ON and actual IN messages.
- ICAO airport codes are sent in the message.
- Following is a condensed list of various codes used in the ACARS message:

Standard Message Identifier	
AEP	POSITION_REPORT_WITH_WEATHER_INFORMATION
AGM	MISCELLANEOUS AG MESSAGE
ALR	ALERT MESSAGE
ARR	ARRIVAL REPORT
DEP	DEPARTURE REPORT
DLA	FLIGHT DELAY
ETA	ESTIMATED TIME OF ARRIVAL
GVR	GROUND ORIGINATED VOICE REQUEST
POS	POSITION REPORT WITHOUT WEATHER INFORMATION

Text Element Identifier	
AD	Aerodrome of Concern or Arrival
AN	Identifier for Aircraft Registration
DA	Aerodrome of Departure
DS	Destination Station
DT	Communication Service Information
BF	Boarded Fuel in gallons unless otherwise indicated
FB	Fuel On Board in lbs. unless otherwise indicated
FI	Flight Identification
LA	ID of officer landing the aircraft
OT, OUT	OUT Time
OF, OFF	OFF Time
ON	ON Time
IN	In Time

Actual OUT message consists of the following:

1. TTY header along with message creation time stamp in UTC
2. Departure Report indicator (DEP)
3. Flight Identification Message (FI)
4. Communication Service Information (DT)

Example 1

```

QU ANPOCJA
.DDLXCXA 010030
DEP
FI JA401/AN CC-AWE/DA SPJC/DS SCEL/OT 0030/FB /BF
DT DDL LIM 010030 M17A

```

Example 2

```

DEP
FI HX0112/AN B-LPN/DA VHHH/DS ZSHC/OT 0007/FB 153/DC 2347

```

Example 3

???? ?QU ANPOCVH
.DDLXCXA 310019
A80
FI VH8233/AN HK-5221
DT DDL SMR 310019 M57A
- 1001 OUTRP 8233/30 SKSM/SKBO HK-5221
/OUT 0019/FOB 00787/BRD 000000/UNT /TYP

Example 4

???? ?QU ANPOCVV
.DDLXCXA 310002
A80
FI VV758/AN HK-5273
DT DDL LIM 310002 M60A
- 1101 OFFRP 0758/30 SPJC/SPZO HK-5273
/OUT 2340/OFF 0002/FOB 00785/ETA

Actual OFF message consists of the following:

1. TTY header along with message creation time stamp in UTC
2. Departure Report indicator (DEP)
3. Flight Identification Message (FI)
4. Communication Service Information (DT)

Example 1

DEP
FI HX0336/AN B-LHA/DA VHHH/DS ZBAA/OF 0001/FB ---

Example 2

QU ANPOCJA
.DDLXCXA 310004
DEP
FI JA304/AN CC-AWG/DA SCCI/DS SCEL/OF 0004
DT DDL PUQ 310004 M18A

Actual ON message consist of the following:

1. TTY header along with message creation time stamp in UTC
2. Arrival Report indicator (ARR)
3. Flight Identification Message (FI)
4. Communication Service Information (DT)

Example 1

ARR
FI HX0762/AN B-LGE/DA VTBS/AD VHHH/ON 0028/FB 85

Example 2

QU ANPOCJA
.DDLXCXA 310011
ARR
FI JA4/AN CC-AWD/DA SCEL/AD SCCF/ON 0011
DT DDL CJC 310011 M28A

Example 3

???? ?QU ANPOCVH
.DDLXCXA 290015
A80
FI VH8036/AN HK-5318
DT DDL MTR 290015 M18A
- 1201 ONRP 8036/28 SKRG/SKMR HK-5318
/ON 0015/FOB 00602

Actual IN message consist of the following:

1. TTY header along with message creation time stamp in UTC
2. Arrival Report indicator (ARR)
3. Flight Identification Message (FI)
4. Communication Service Information (DT)

Example 1

ARR
FI HX0762/AN B-LGE/DA VTBS/AD VHHH/IN 0034/FB 85

Example 2

QU ANPOCJA
.DDLXCXA 310000
ARR
FI JA29/AN CC-AWB/DA SCFA/AD SCEL/IN 0000/FB /LA /LR
DT DDL SCL 310000 M29A

Example 3

```

???? ?QU ANPOCVV
.DDLXCXA 310007
A80
FI VV749/AN HK-5286
DT DDL LIM 310007 M11A
- 1301 INRP 0749/ SPZO/SPJC HK-5286
/ON 0000/IN 0007/FOB 0038

```

Example 4

```

???? ?QU ANPOCVV
.DDLXCXA 290015
A80
FI VV755/AN HK-5277
DT DDL LIM 290015 M51A
- 3501 SUMMRY 0755/28 SPZO/SPJC HK-5277
/OUT 2228/FOB 00655
/OFF 2249/FOB 00635
/ON 2355/FOB 00392
/IN 0005/FOB 00385
/TKO /CRW
/LND /CRW
/APP /RWY /RVR /ALT
/ERR /ERR /ERR
/CPT /FO
/SO1 /SO2
/CHK

```

FI message processing

- The first item in FI message is always the keyword 'FI'. Whitespace separates 'FI' and the carrier code, flight number.
- Key-value pairs start and start with '/'. For example, in the text /DA SCCI/, DA is the aerodrome of departure and SCCI is the ICAO code of the airport. ICAO code is looked up to get the IATA code of the airport while processing.
- Commonly expected values in FI message are
 - FI → carrier code and flight number
 - AN → identifier to denote aircraft registration number
 - DA → Aerodrome of departure. It usually contains the ICAO code.
 - DS → Destination station
 - AD → Aerodrome of concern or arrival
 - OT → OUT time
 - OF → OFF time
 - ON → ON time
 - IN → IN time

DT message processing

- DT message usually follows the DT message.
- The first item in DT message is always the keyword 'DT'.

- The second item is likely the ARINC relay station code. This item is not used for processing
- The third item is the airport code. If it is a DEP message, it is the departure airport code. If it is an ARR message, it is the arrival-departure code. There are messages where DEP or ARR is been sent. In these cases, the time is used to determine if the airport is for departure or arrival. That is, If OUT/OFF time is present in the message, then the airport code is processed as departure airport. if ON/IN time is present in the message, then the airport code is processed as arrival airport. When all four times are present, the airport code is processed as for arrival airport.

Example

```
QU LTNWR7X
.BKKXCXA 201738
ARR
FI UO614/AN BLCF/DA VHHH/AD RKSI/IN 1737/FB 4/LA /LR
DT BKK ICN 201738 M81A
```

In the above example, IN time is 1737 from the FI line and 1738 in DT line. In such cases where there is a discrepancy, the DT time is taken for processing.

- ICAO airport codes sent in the message are mapped to IATA airport codes for processing. The file is located at \\padme\d\$\Fv\Ops\Exe\ACARSFeedProcessor\Dat\AirportCodeTranslation.txt on the test server.
- The timestamp in the TTY header is used to do flight matching. This timestamp is used as departure time for DEP messages and used as an arrival time for ARR messages. Once a match is found, the timestamp is discarded.
- In order to process the ACARS messaged for a particular airline, an entry for the airline must be present in the file at \\padme\d\$\Fv\Ops\Exe\ACARSFeedProcessor\Dat\AirlineInclusion.txt
- Watch for flights that are delayed to the next day and flights that depart early in the previous day. In the following example, 2355Z is the standard schedule departure time and the ACT OUT is 0015.

Example

```
QU LTNWR7X
.BJSXCXA 210015
DEP
FI UO1600/AN BLPE/DA VHHH/DS RJFF/OT 0015/FB 10/BF
DT BJS HKG 210015 M02A
```

For the message above, STD = 20th 2355; Act OUT from the message is 0015.