

Asterix category 150 - MADAP Plan Server - Flight Data Message

category: 150

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Preamble

The main purpose of I150 messages is to distribute Flight Plan data to clients. However, other data items can be sent using I150 as well. I150 messages can be divided into the following sub-categories:

- Flight Plan (Short & Complete)
- Start/End of cycle
- Correlation/De-correlation
- Conflict Alert

Description of standard data items

I150/010 - Destination ID

definition: Identification of the receiving centre.

Group

I150/010/CEN - Centre Identifier

Element

bit size: 8

Raw Content

I150/010/POS - Workstation Identifier

Element

bit size: 8

Raw Content

Translation: See Annex 1 Centre ID definition

Note: The Destination ID is irrelevant in CAT150 messages since the flight plan messages are sent to all 10 centres. Hence, the centre identifier is set to broadcast. The workstation identifier can be ignored.

I150/020 - Source ID

definition: Identification of the sending centre.

Group

I150/020/CEN - Centre Identifier

Element

bit size: 8

Raw Content

I150/020/POS - Workstation Identifier

Element

bit size: 8

Raw Content

Translation: See Destination ID.

Note: The Source ID centre identifier will define the flight plan source centre.
The workstation identifier can be ignored.

I150/030 - Message Type

definition: The event that triggered the message transmission.

Element

bit size: 8

Values:

- 1:** Flight plan creation
- 2:** Flight plan modification
- 3:** Flight plan repetition
- 4:** Manual flight plan deletion
- 5:** Automatic flight plan deletion
- 6:** Flight is beyond extraction area boundary
- 251:** Short term conflict alert
- 252:** Correlations
- 253:** Decorrelations
- 254:** Start of background loop
- 255:** End of background loop

I150/040 - Plan Reference Number

definition: Identification of the flight plan.

Element

bit size: 16

Raw Content

Note: See Plan and Track Numbers.

The currently defined range for plan reference numbers used in MADAP is 0 .. 1999. Client systems should allow for a range of 0 .. 2047.

I150/050 - Callsign

definition: Flight identity.

Element

bit size: 56

Ascii string (8-bits per char)

I150/060 - Present Mode 3A

definition: Actual transponder code mode 3A of the flight.

Element

bit size: 32

Ascii string (8-bits per char)

Translation: Octal representation.

- zzzz: no code available/assigned
- dd00: code family
- other: discrete code

where:

- z := 'z'

- 0 ::= '0'
- d ::= '0' .. '7'

I150/070 - Next Mode 3A

definition: Next transponder code mode 3A of the flight.

Element

bit size: 32

Ascii string (8-bits per char)

Translation: See Present Mode 3A.

I150/080 - Departure Aerodrome

definition: Identification of the flight's departure aerodrome.

Element

bit size: 32

Ascii string (8-bits per char)

Translation:

- zzzz: no standard ICAO location identifier
- other: unique ICAO location identifier

where:

- z ::= 'z'

I150/090 - Destination Aerodrome

definition: Identification of the flight's destination aerodrome.

Element

bit size: 32

Ascii string (8-bits per char)

Translation: See Departure Aerodrome.

I150/100 - Type Flags

definition: Type of flight and type of flight plan.

Group

I150/100/GAT - General Air Traffic

Element

bit size: 1

Raw Content

I150/100/OAT - Operational Air Traffic

Element

bit size: 1

Raw Content

Spare bits: 3

I150/100/CPL - Complete Flight Plan

Element

bit size: 1

Raw Content

I150/100/SPN - Short Flight Plan

Element
bit size: 1
Raw Content

Spare bits: 1

I150/110 - Status Flags

definition: Status of the flight.

Group

Spare bits: 1

I150/110/HLD - Aircraft is in Hold State

Element
bit size: 1
Raw Content

I150/110/RVQ - Aircraft is RVSM Equipped

Element
bit size: 1
Raw Content

I150/110/RVC - Aircraft is RVSM Capable

Element
bit size: 1
Raw Content

I150/110/RVX - Aircraft is RVSM Exempted

Element
bit size: 1
Raw Content

Spare bits: 3

Note: If an aircraft is set in hold status then the ETO values are increased with 3 hours.

RVQ is set for:

- GAT or GAT SPN: never
- GAT or OAT CPL: if "W" filed in field 10a [Radio Communication, Navigation and Approach Aid Equipment] of the flightplan

RVC is set for:

- GAT or OAT SPN: on controller input or reception of ACT with "RVSM Capable"
- **GAT or OAT CPL (in decreasing priority):**
 - Controller input or reception of ABI or ACT with "RVSM Capable"
 - "W" filed in field 10a [Radio Communication, Navigation and Approach Aid Equipment] and "1" filed in field 9a [number of aircraft] in the flightplan.

RVX is set for:

- GAT SPN: on controller input "RVSM Exempted"
- OAT SPN: by default or on controller input "RVSM Exempted"
- GAT or OAT CPL: if "O", "M" or "A" filed in field 8b [type of flight] of the flightplan

I150/120 - Aircraft Type

definition: Flight formation details.

Group

I150/120/NOA - Number of Aircraft

Element
bit size: 16
Ascii string (8-bits per char)

I150/120/TOA - Type of Aircraft

Element
bit size: 32
Ascii string (8-bits per char)

I150/120/WT - Wake Turbulence

Element
bit size: 8
Ascii string (8-bits per char)

I150/130 - Cleared Flight Level

definition: Cleared flight level from the sector that has the aircraft under control.

Element
bit size: 24
Ascii string (8-bits per char)

Translation: Cleared Flight Level is listed in FLs (100ft).

Note: The Cleared Flight Level corresponds to the “current Planned Flight Level”, valid for the sector which is currently in communications with the aircraft.

Intermediate flight levels, temporarily assigned by controllers, are not distributed by MADAP.

I150/140 - Route Points, Description

definition: Route point descriptions.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I150/140/T - Route Point Type

Element
bit size: 8
Values:
1: P, point
2: B, point with bearing and distance
3: LS, latitude/longitude position short format
4: LL, latitude/longitude position long format
5: X, x/y co-ordinate position
6: G, georeference position
14: E, airport

I150/140/E - Route Point Description Element

Element
bit size: 88
Ascii string (8-bits per char)

Translation: See layout table in specification document.

Note: For all route point items (140..180), present in a single message the count values are equal. Co4 ordinate (1), description (1), etc. form a single route point.

The maximum number of route points is currently set to 28.

I150/150 - Route Points, Coordinates

definition: Route point co-ordinates.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I150/150/X - X Co-ordinate

Element

bit size: 16

Signed quantity

$LSB = 1/2^6 \text{ NM} \approx 1.5625e - 2 \text{ NM}$

unit: "NM"

I150/150/Y - Y Co-ordinate

Element

bit size: 16

Signed quantity

$LSB = 1/2^6 \text{ NM} \approx 1.5625e - 2 \text{ NM}$

unit: "NM"

Translation: Co-ordinate values are in [NM] as Cartesian offsets from 51°00'00"N, 008°00'00"E.

I150/151 - Route Points, Geographic Position

definition: Route point position in Lat. / Long. (WSG84).

Repetitive

Regular, 1 byte(s) REP field size.

Group

I150/151/LAT - Latitude in WGS.84 in Two's Complement Form

Element

bit size: 24

Signed quantity

$LSB = 180/2^{23} \text{ }^\circ \approx 2.1457672119140625e - 5 \text{ }^\circ$

unit: "°"

≥ -90.0

≤ 90.0

I150/151/LON - Longitude in WGS.84 in Two's Complement Form

Element

bit size: 24

Signed quantity

$LSB = 180/2^{23} \text{ }^\circ \approx 2.1457672119140625e - 5 \text{ }^\circ$

unit: "°"

≥ -180.0

< 180.0

Note: This corresponds to an accuracy of at least 2.4 meters.

I150/160 - Route Points, Time

definition: Estimated times over route points.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I150/160/HH - Hours

Element
bit size: 16
Ascii string (8-bits per char)

I150/160/MM - Minutes

Element
bit size: 16
Ascii string (8-bits per char)

Translation: Times are specified in 24-hour format. I.e. ranging from 00:00 to 23:59.

I150/170 - Route Points, Flight Level

definition: Planned flight level over route point.

Repetitive

Regular, 1 byte(s) REP field size.

Element
bit size: 24
Ascii string (8-bits per char)

Translation: The planned flight levels are given in FLs (100 ft).

Note: All flight levels have the same value, equal to the "Current Planned Flight Level". This is the Planned Flight Level valid for the sector which is in communication with the aircraft.

I150/171 - Route Points, Requested Flight Level

definition: Requested flight level over route point.

Repetitive

Regular, 1 byte(s) REP field size.

Element
bit size: 24
Ascii string (8-bits per char)

Translation: The planned flight levels are given in FLs (100 ft).

I150/180 - Route Points, Speed

definition: Filed true air speed over route point.

Repetitive

Regular, 1 byte(s) REP field size.

Element
bit size: 32
Ascii string (8-bits per char)

Translation: The true airspeed is indicated in Knots [NM/h].

I150/190 - Controller ID

definition: Current control position in charge of the aircraft.

Element
bit size: 16
Ascii string (8-bits per char)

Translation: Single character controller ids are sent with a leading space character.
This can be interpreted as a right aligned value.

I150/200 - Field 18

definition: Field 18 free text information. Contains subfields, each starting with a 3 or 4 letter keyword followed by forward slash; e.g. RMK/free text.

Repetitive

Regular, 1 byte(s) REP field size.

Element
bit size: 8
Ascii string (8-bits per char)

I150/210 - Correlated Track Number

definition: The track number of the track that has been correlated to the flight plan.

Element
bit size: 16
Raw Content

Note: See Plan and Track Numbers.

I150/220 - Maximum Plan Count

definition: Maximum plan count is the maximum number of possible active plans.

Element
bit size: 16
Unsigned integer

Note: The maximum number of active plans is fixed and, at present, set to 302.

I150/230 - Number of Plans

definition: Number of plans that were sent during the last update cycle.

Element
bit size: 16
Unsigned integer

Note: The number of extracted plans should be equal to the number of plans received between the start of cycle and end of cycle messages.

I150/240 - Newly Correlated Plans

definition: Array of correlated plan/track combinations valid in the Maastricht UAC Area of Interest.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I150/240/PLAN - Plan Number

Element
bit size: 16
Raw Content

I150/240/TRACK - Track Number

Element
bit size: 16
Raw Content

Note: See Plan and Track Numbers.

I150/250 - Newly De-correlated Plans

definition: Array of de-correlated plans.

Repetitive

Regular, 1 byte(s) REP field size.

Element
bit size: 16
Raw Content

Note: Contains an array of Plan Numbers. See Plan and Track Numbers.

I150/251 - Tracks in Conflict

definition: Array of conflicting track/track combinations.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I150/251/TRACK1 - Track Number 1

Element
bit size: 16
Raw Content

I150/251/TRACK2 - Track Number 2

Element
bit size: 16
Raw Content

Note: See Plan and Track Numbers.

User Application Profile

- 1: I150/010 - Destination ID
- 2: I150/020 - Source ID
- 3: I150/030 - Message Type
- 4: I150/040 - Plan Reference Number
- 5: I150/050 - Callsign
- 6: I150/060 - Present Mode 3A
- 7: I150/070 - Next Mode 3A
- (FX) - Field extension indicator
- 8: I150/080 - Departure Aerodrome
- 9: I150/090 - Destination Aerodrome
- 10: I150/100 - Type Flags
- 11: I150/110 - Status Flags
- 12: I150/120 - Aircraft Type

- 13: I150/130 - Cleared Flight Level
- 14: I150/140 - Route Points, Description
- (FX) - Field extension indicator
- 15: I150/150 - Route Points, Coordinates
- 16: I150/160 - Route Points, Time
- 17: I150/170 - Route Points, Flight Level
- 18: I150/180 - Route Points, Speed
- 19: I150/190 - Controller ID
- 20: I150/200 - Field 18
- 21: I150/210 - Correlated Track Number
- (FX) - Field extension indicator
- 22: I150/220 - Maximum Plan Count
- 23: I150/230 - Number of Plans
- 24: I150/240 - Newly Correlated Plans
- 25: I150/250 - Newly De-correlated Plans
- 26: I150/251 - Tracks in Conflict
- 27: I150/171 - Route Points, Requested Flight Level
- 28: I150/151 - Route Points, Geographic Position
- (FX) - Field extension indicator