

# Asterix category 004 - Safety Net Messages

**category:** 004

**edition:** 1.13

**date:** 2024-06-04

## Preamble

Surveillance data exchange.

## Description of standard data items

### I004/000 - Message Type

definition: This Data Item allows for a more convenient handling of the messages at the receiver side by further defining the type of transaction.

Element

bit size: 8

Values:

- 1:** Alive Message (AM)
- 2:** Route Adherence Monitor Longitudinal Deviation (RAMLD)
- 3:** Route Adherence Monitor Heading Deviation (RAMHD)
- 4:** Minimum Safe Altitude Warning (MSAW)
- 5:** Area Proximity Warning (APW)
- 6:** Clearance Level Adherence Monitor (CLAM)
- 7:** Short Term Conflict Alert (STCA)
- 8:** Approach Path Monitor (APM)
- 9:** RIMCAS Arrival / Landing Monitor (ALM)
- 10:** RIMCAS Arrival / Departure Wrong Runway Alert (WRA)
- 11:** RIMCAS Arrival / Departure Opposite Traffic Alert (OTA)
- 12:** RIMCAS Departure Monitor (RDM)
- 13:** RIMCAS Runway / Taxiway Crossing Monitor (RCM)
- 14:** RIMCAS Taxiway Separation Monitor (TSM)
- 15:** RIMCAS Unauthorized Taxiway Movement Monitor(UTMM)
- 16:** RIMCAS Stop Bar Overrun Alert (SBOA)
- 17:** End Of Conflict (EOC)
- 18:** ACAS Resolution Advisory (ACASRA)
- 19:** Near Term Conflict Alert (NTCA)
- 20:** Downlinked Barometric Pressure Setting Monitor (DBPSM)
- 21:** Speed Adherence Monitor (SAM)
- 22:** Outside Controlled Airspace Tool (OCAT)
- 23:** Vertical Conflict Detection (VCD)
- 24:** Vertical Rate Adherence Monitor (VRAM)
- 25:** Cleared Heading Adherence Monitor (CHAM)
- 26:** Downlinked Selected Altitude Monitor (DSAM)
- 27:** Holding Adherence Monitor (HAM)
- 28:** Vertical Path Monitor (VPM)
- 29:** RIMCAS Taxiway Traffic Alert (TTA)
- 30:** RIMCAS Arrival/Departure Close Runway Alert (CRA)
- 31:** RIMCAS Arrival/Departure Aircraft Separation Monitor (ASM)
- 32:** RIMCAS ILS Area Violation Monitor (IAVM)
- 33:** Final Target Distance Indicator (FTD)
- 34:** Initial Target Distance Indicator (ITD)
- 35:** Wake Vortex Indicator Infringement Alert (IIA)
- 36:** Sequence Warning (SQW)

- 37:** Catch Up Warning (CUW)
- 38:** Conflicting ATC Clearances (CATC)
- 39:** No ATC Clearance (NOCLR)
- 40:** Aircraft Not Moving despite ATC Clearance (NOMOV)
- 41:** Aircraft leaving/entering the aerodrome area without proper handover (NOH)
- 42:** Wrong Runway or Taxiway Type (WRTY)
- 43:** Stand Occupied (STOCC)
- 44:** Ongoing Alert (ONGOING)
- 45:** Non-Transgression Zone Violation (NTZ)
- 97:** Lost Track Warning (LTW)
- 98:** Holding Volume Infringement (HVI)
- 99:** Airspace Infringement Warning (AIW)

Notes:

1. In applications where transactions of various types are exchanged, the Message Type Data Item facilitates the proper message handling at the receiver side.
2. All Message Type values are reserved for common standard use.
3. Message Types 33 to 37 have been designed for applications supporting the ATCO in the optimisation of separation during final approach. They provide information required to indicate to the ATCO the closest possible distance of a following aircraft in relation to a leading aircraft. This allows to make optimum use of the available runway capacity.
4. The list of items present for the 31 types of messages is defined in the following 4 tables. M stands for mandatory, O for optional, X for never present. :

```

item 001 002 003 004 005 006 007 008
I004/000 M M M M M M M M
I004/010 M M M M M M M M
I004/015 O O O O O O O O
I004/020 M M M M M M M M
I004/030 X M M M M M M M
I004/035 X X X X X X M X
I004/040 X M M M M M M M
I004/045 X O O O O O O
I004/060 M X X X X X X X
I004/070 X X X O O X O X
I004/074 X M X X X X X X
I004/075 X X M X X X X M
I004/076 X X X X X O X O
I004/100 X X X X M X X O
I004/110 X O O O O O O
I004/120 X X X M M X M X
I004/170 X O O O O O O O
I004/171 X X X X X X O X
I004/RE O O O O O O O O

```

```

item 009 010 011 012 013 014 015 016
I004/000 M M M M M M M M
I004/010 M M M M M M M M
I004/015 O O O O O O O O
I004/020 M M M M M M M M
I004/030 M M M M M M M M
I004/035 M X M M M M O X
I004/040 M M M M M M M M
I004/045 O O O O O O O O
I004/060 X X X X X X X X
I004/070 O X O O O O X
I004/074 X X X X X X X X

```

I004/075 X X X X X X X X  
I004/076 X X X X X X X X  
I004/100 M M M M M M M M  
I004/110 0 0 0 0 0 0 0 0  
I004/120 M M M M M 0 0 0  
I004/170 0 0 0 0 0 0 0 0  
I004/171 0 X 0 0 0 0 0 X  
I004/RE 0 0 0 0 0 0 0 0

item 017 018 019 020 021 022 023 024  
I004/000 M M M M M M M M  
I004/010 M M M M M M M M  
I004/015 0 0 0 0 0 0 0 0  
I004/020 M M M M M M M M  
I004/030 0 X M M M M M M  
I004/035 0 X M X X M X  
I004/040 M M M M M M M M  
I004/045 0 0 0 0 0 0 0 0  
I004/060 X X X X X X X X  
I004/070 X 0 0 X X 0 0 X  
I004/074 X X X X X X X X  
I004/075 X X X X X X X X  
I004/076 X X X X X X X 0  
I004/100 X X X 0 0 M M 0  
I004/110 X X 0 0 0 0 0 0  
I004/120 X X 0 M 0 M M 0  
I004/170 X M 0 0 0 0 0 0  
I004/171 X 0 0 X X X 0 X  
I004/RE 0 M 0 0 0 0 0 0

item 025 026 027 028 029 030 031 032  
I004/000 M M M M M M M M  
I004/010 M M M M M M M M  
I004/015 0 0 0 0 0 0 0 0  
I004/020 M M M M M M M M  
I004/030 M M M M M M M M  
I004/035 X X X X 0 0 M 0  
I004/040 M M M M M M M M  
I004/045 0 0 0 0 0 0 0 0  
I004/060 X X X X X X X X  
I004/070 X X X X 0 0 0 0  
I004/074 X X 0 X 0 X X X  
I004/075 X X X X 0 X X X  
I004/076 X 0 0 0 0 X X X  
I004/100 0 0 0 0 0 0 0 0  
I004/110 0 0 0 0 0 0 0 0  
I004/120 0 0 0 X 0 0 0 0  
I004/170 0 0 0 0 0 0 0 0  
I004/171 X X X X 0 0 0 0  
I004/RE 0 0 0 0 0 0 0 0

item 033 034 035 036 037 038 039 040  
I004/000 M M M M M M M M  
I004/010 M M M M M M M M  
I004/015 0 0 0 0 0 0 0 0  
I004/020 M M M M M M M M  
I004/030 M M M M M M M M  
I004/035 M M M X 0 M X X  
I004/040 M M M M M M M M  
I004/045 0 0 0 0 0 0 0 0  
I004/060 X X X X X X X X

```

I004/070 0 0 M X X X X X
I004/074 X X X X X X X X
I004/075 X X X X X X X X
I004/076 X X X X X X X X
I004/100 0 0 0 0 0 0 0
I004/110 X X X X X 0 0 0
I004/120 M M O X X M M M
I004/170 M M M M M 0 0 0
I004/171 M M M X M 0 X X
I004/RE 0 0 M 0 0 0 0 0

item 041 042 043 044 045 097 098 099
I004/000 M M M M M M M M M
I004/010 M M M M M M M M M
I004/015 0 0 0 0 0 0 0 0
I004/020 M M M M M M M M M
I004/030 M M M M M M M M M
I004/035 X X X 0 X X X X
I004/040 M M M M M M M M M
I004/045 0 0 0 0 0 0 0 0
I004/060 X X X X X X X X X
I004/070 X X X X 0 0 0 0
I004/074 X X X X X X X X
I004/075 X X X X X X X X
I004/076 X X X X X X X X
I004/100 0 M M M 0 0 0 0
I004/110 0 0 0 0 0 0 0 0
I004/120 M 0 X X M 0 0 0
I004/170 0 0 0 0 0 0 0 0
I004/171 X X X X X X X X X
I004/RE 0 0 0 0 0 M 0 0

```

### **I004/010 - Data Source Identifier**

definition: Identification of the Safety Nets server sending the message.

Group

#### **I004/010/SAC - System Area Code**

Element  
bit size: 8  
Raw Content

#### **I004/010/SIC - System Identification Code**

Element  
bit size: 8  
Raw Content

**Note:**

- The up-to-date list of SACs is published on the EUROCONTROL Web Site (<http://www.eurocontrol.int/asterix>).

### **I004/015 - SDPS Identifier**

definition: Identification of the SDPS providing data to the safety nets server.

Repetitive

Regular, 1 byte(s) REP field size.

Group

#### **I004/015/SAC - System Area Code**

Element  
bit size: 8  
Raw Content

#### I004/015/SIC - System Identification Code

Element  
bit size: 8  
Raw Content

**Note:** - The up-to-date list of SACs is published on the EUROCONTROL Web Site (<http://www.eurocontrol.int/asterix>).

#### I004/020 - Time of Message

definition: Absolute time stamping of the message in the form of elapsed time since last midnight

Element  
bit size: 24  
Unsigned quantity  
 $LSB = 1/2^7 \text{ s} \approx 7.8125e - 3 \text{ s}$   
unit: "s"

##### Notes:

- This time is given at an application level (e.g. time at which a message is filled), and not at the communication level (i.e. not the time at which the data-block containing the message is sent).
- The time is reset to zero at every midnight.

#### I004/030 - Track Number 1

definition: Identification of a track number related to conflict

Element  
bit size: 16  
Raw Content

##### Notes:

1. This is the track number of the first track involved in the conflict in case of an STCA or a RIMCA or the track involved in case of one of the other Safety Net functions.
2. This track number is distributed in this field exactly as it was received from the Radar Processor Unit (identified by I004/015) and its range is depending on the range used by that unit.
3. In case of Message Type = 33 (Final Target Distance Indicator - FTD) this represents the Track Number of the following aircraft.
4. In case of Message Type = 34 (Initial Target Distance Indicator - ITD) this represents the Track Number of the following aircraft.
5. In case of Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this represents the track number of the following aircraft.
6. In case of Message Type = 37 (Catch-Up Warning - CUW) this represents the track number of the following aircraft (i.e. the one catching up).

#### I004/035 - Track Number 2

definition: Together with I004/030, this item defines the track pair in conflict.

Element  
bit size: 16  
Raw Content

Notes:

1. This is the track number of the second track involved in the conflict in case of an STCA, a RIMCA, a NTCA, a VCD or in message types 33 to 35 and 37.
2. For the other Safety Net functions, this item is not used.
3. This track number is distributed in this field exactly as it was received from the Radar Processor Unit and its range is depending on the range used by that unit.
4. In case of Message Type = 33 (Final Target Distance Indicator - FTD) this represents the Track Number of the leading aircraft
5. In case of Message Type = 34 (Initial Target Distance Indicator - ITD) this represents the Track Number of the leading aircraft.
6. In case of Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this represents the track number of the leading aircraft.
7. In case of Message Type = 37 (Catch-Up Warning - CUW) this represents the track number of the leading aircraft.
8. In case of Message Type = 38 (Conflicting ATC Clearances - CATC) this represents the track number of the aircraft to which the first ATC Clearance was issued.

## **I004/040 - Alert Identifier**

definition: Identification of an alert (Alert number)

Element  
bit size: 16  
Raw Content

Notes:

1. This item is the Alert Identification of the conflict in the system
2. This number shall be assigned, by the Safety Net Server, for instance incrementally to every new alert and restart on zero after reaching the maximum value (65535)

## **I004/045 - Area and Alert Status**

definition: Information concerning status of the alert

Group

### **I004/045/AREA - Area Status**

Group

#### **I004/045/AREA/EP - Element Populated Bit**

Element  
bit size: 1  
Values:

- 0:** Element not populated  
**1:** Element populated

#### **I004/045/AREA/VAL - Area Status Value**

Element  
bit size: 3  
Values:

- 0:** Inactive

- 1:** Active
- 2:** Pre-active
- 3:** Reserved for Future Use
- 4:** Reserved for Future Use
- 5:** Reserved for Future Use
- 6:** Reserved for Future Use
- 7:** Reserved for Future Use

#### **I004/045/STAT - Status of the Alert**

Element  
bit size: 3  
Raw Content

Spare bits: 1

#### **I004/060 - Safety Net Function and System Status**

definition: Status of the Safety Nets functions handled by the system  
Extended

#### **I004/060/MRVA**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** MRVA function

#### **I004/060/RAMLD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** RAMLD function

#### **I004/060/RAMHD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** RAMHD function

#### **I004/060/MSAW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** MSAW function

#### **I004/060/APW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** APW function

#### **I004/060/CLAM**

Element  
bit size: 1  
Values:  
**0:** Default

**1:** CLAM function

**I004/060/STCA**

Element

bit size: 1

Values:

**0:** Default

**1:** STCA function

*(FX) - extension bit*

**I004/060/APM**

Element

bit size: 1

Values:

**0:** Default

**1:** APM function

**I004/060/RIMCA**

Element

bit size: 1

Values:

**0:** Default

**1:** RIMCA function

**I004/060/ACASRA**

Element

bit size: 1

Values:

**0:** Default

**1:** ACAS RA function

**I004/060/NTCA**

Element

bit size: 1

Values:

**0:** Default

**1:** NTCA function

**I004/060/DG**

Element

bit size: 1

Values:

**0:** Default

**1:** System degraded

**I004/060/OF**

Element

bit size: 1

Values:

**0:** Default

**1:** Overflow error

**I004/060/OL**

Element

bit size: 1

Values:

**0:** Default

**1:** Overload error

*(FX) - extension bit*

**I004/060/AIW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** AIW function

#### **I004/060/PAIW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** PAIW function

#### **I004/060/OCAT**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** OCAT function

#### **I004/060/SAM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** SAM function

#### **I004/060/VCD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** VCD function

#### **I004/060/CHAM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** CHAM function

#### **I004/060/DSAM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** DSAM function

*(FX) - extension bit*

#### **I004/060/DBPSMARR**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** DBPSM ARR sub-function

#### **I004/060/DBPSMDEP**

Element  
bit size: 1  
Values:

**0:** Default  
**1:** DBPSM DEP sub-function

#### **I004/060/DBPSMTL**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** DBPSM TL sub-function

#### **I004/060/VRAMCRM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** VRAM CRM sub-function

#### **I004/060/VRAMVTM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** VRAM VTM sub-function

#### **I004/060/VRAMVRM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** VRAM VRM sub-function

#### **I004/060/HAMHD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** HAM HD sub-function

*(FX) - extension bit*

#### **I004/060/HAMRD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** HAM RD sub-function

#### **I004/060/HAMVD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** HAM VD sub-function

#### **I004/060/HVI**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** HVI function

#### **I004/060/LTW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** LTW function

#### **I004/060/VPM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** VPM function

#### **I004/060/TTA**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** TTA function

#### **I004/060/CRA**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** CRA function

*(FX) - extension bit*

#### **I004/060/ASM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** ASM sub-function

#### **I004/060/IAVM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** IAVM sub-function

#### **I004/060/FTD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** FTD Function

#### **I004/060/ITD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** ITD function

#### **I004/060/IIA**

Element  
bit size: 1  
Values:

**0:** Default  
**1:** IIA function

#### **I004/060/SQW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** SQW function

#### **I004/060/CUW**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** CUW function

*(FX) - extension bit*

#### **I004/060/CATC**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** CATC function

#### **I004/060/NOCLR**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** NOCLR sub-function

#### **I004/060/NOMOV**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** NOMOV Function

#### **I004/060/NOH**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** NOH function

#### **I004/060/WRTY**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** WRTY function

#### **I004/060/STOCC**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** STOCC function

#### **I004/060/ONGOING**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** ONGOING function

(FX) - extension bit

#### I004/060/NTZ

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Non-Transgression Zone Function

Spare bits: 6

(FX) - extension bit

Notes:

1. This item only sent in “alive messages” to describe the status of the Safety Net functions, handled by the system
2. Value 0 means either that the function is not managed by the system or has failed.
3. Value 1 means that the function is managed by the system and is running well
4. “Overflow” is defined as a situation where the number of alerts in the system has exceeded the threshold for safe operation. Potential prioritization of the alerts may lead to a loss of information.
5. “Overload” is defined as a system status in which the number of alerts does not allow for a reliable performance. A correct calculation and transmission cannot be guaranteed.
6. “System degraded” means that information from one or more sensors is lost.

### I004/070 - Conflict Timing and Separation

definition: Information on Timing and Aircraft Separation  
Compound

#### I004/070/TC - Time to Conflict

description: Time remaining to actual conflict situation  
Element  
bit size: 24  
Unsigned quantity  
 $LSB = 1/2^7 \text{ s} \approx 7.8125e - 3 \text{ s}$   
unit: "s"

#### I004/070/TCA - Time to Closest Approach

description: Time to closest proximity between entities in conflict  
Element  
bit size: 24  
Unsigned quantity  
 $LSB = 1/2^7 \text{ s} \approx 7.8125e - 3 \text{ s}$   
unit: "s"

#### I004/070/CHS - Current Horizontal Separation

description: Current horizontal separation  
Element  
bit size: 24  
Unsigned quantity  
 $LSB = 1/2 \text{ m} \approx 0.5 \text{ m}$   
unit: "m"

## **I004/070/MHS - Estimated Minimum Horizontal Separation**

description: Estimated minimum horizontal separation.

Element

bit size: 16

Unsigned quantity

LSB = 1/2 m ≈ 0.5 m

unit: "m"

## **I004/070/CSV - Current Vertical Separation**

description: Current vertical separation

Element

bit size: 16

Unsigned quantity

LSB = 25 ft ≈ 25.0 ft

unit: "ft"

## **I004/070/MVS - Estimated Minimum Vertical Separation**

description: Estimated Minimum Vertical Separation

Element

bit size: 16

Unsigned quantity

LSB = 25 ft ≈ 25.0 ft

unit: "ft"

## **I004/074 - Longitudinal Deviation**

definition: Longitudinal deviation for Route Adherence Monitoring, in two's complement.

Element

bit size: 16

Signed quantity

LSB = 32 m ≈ 32.0 m

unit: "m"

### **Note:**

- Longitudinal deviation will be positive if the aircraft is ahead of its planned position. Longitudinal deviation will be negative if the aircraft is behind its planned position.

## **I004/075 - Transversal Distance Deviation**

definition: Transversal distance deviation for Route Adherence Monitoring, in two's complement.

Element

bit size: 24

Signed quantity

LSB = 1/2 m ≈ 0.5 m

unit: "m"

### **Note:**

- Deviation to the right of the track will be coded as a positive value. Deviation to the left of the track will be coded as a negative value

## **I004/076 - Vertical Deviation**

definition: Vertical Deviation from planned altitude, in two's complement

Element  
bit size: 16  
Signed quantity  
LSB = 25 ft ≈ 25.0 ft  
unit: "ft"

**Note:**

- Positive value if aircraft is above planned altitude Negative value if aircraft is below planned altitude

#### **I004/100 - Area Definition**

definition: Name of the area involved in a Safety Net alarm  
Compound

#### **I004/100/AN - Area Name**

description: Name of the area involved in a Safety Net alarm. Characters 1-8 (coded on 6 bits each) defining the name of the area. Coding rules are provided in [3]Section 3.1.2.9"

Element  
bit size: 48  
ICAO string (6-bits per char)

#### **I004/100/CAN - Crossing Area Name**

description: Name of Crossing Area Involved in RIMCA. Each octet is an ASCII character defining the name of the crossing area involved in a runway/taxiway crossing alert (message type 013)

Element  
bit size: 56  
Ascii string (8-bits per char)

#### **I004/100/RT1 - Runway/Taxiway Designator 1**

description: Designator of Runway/Taxiway 1 Involved in a RIMCA  
Each octet is an ASCII character defining the runway designator

Element  
bit size: 56  
Ascii string (8-bits per char)

#### **I004/100/RT2 - Runway/Taxiway Designator 2**

description: Designator of Runway/Taxiway 2 Involved in a RIMCA  
Each octet is an ASCII character defining the runway designator

Element  
bit size: 56  
Ascii string (8-bits per char)

#### **I004/100/SB - Stop Bar Designator**

description: Designator of Stop-Bar Involved in RIMCA Each octet is an ASCII character defining the stop-bar involved in a stop-bar crossed alert (message type 016)

Element  
bit size: 56  
Ascii string (8-bits per char)

#### **I004/100/G - Gate Designator**

description: Gate Designator (in 7 characters) of the approaching aircraft in a RIMCA or a STOCC message, Each octet is an ASCII character defining the gate for the approaching aircraft

Element  
bit size: 56  
Ascii string (8-bits per char)

Notes:

1. The area name is always left adjusted. If needed, the remaining characters are filled with space character.
2. The name of the crossing area is always left adjusted. If needed, the remaining characters are filled with space characters.
3. The runway designator is always left adjusted. If needed, the remaining characters are filled with space characters. The runway is encoded as follows: Location indicator, runway direction, left or right. Example: EGLL09L means London Heathrow (EGLL), Runway 09 (direction 090 degrees) left runway
4. The runway designator is always left adjusted. If needed, the remaining characters are filled with space characters. The runway is encoded as follows: Location indicator, runway direction, left or right. Example: EGLL09L means London Heathrow (EGLL), Runway 09 (direction 090 degrees) left runway
5. The stop-bar designator is always left adjusted. If needed, the remaining characters are filled with space characters.
6. The gate designator is always left adjusted. If needed, the remaining characters are filled with space character.

## **I004/110 - FDPS Sector Control Identification**

definition: Identification of a list of FDPS Sector Control Positions in charge of the involved targets, as provided by the FDPS

Repetitive

Regular, 1 byte(s) REP field size.

Group

### **I004/110/CEN**

description: Centre identification code

Element  
bit size: 8  
Raw Content

### **I004/110/POS**

description: Control position identification code

Element  
bit size: 8  
Raw Content

#### **Note:**

- The Centre identification code and the Control position identification code must be defined between the communication partners.

## **I004/120 - Conflict Characteristics**

definition: Description of the Conflict Properties

Compound

### **I004/120/CN - Conflict Nature**

description: Nature of the conflict expressed by a set of properties  
Extended

### **I004/120/CN/MAS - Conflict Location in Military Airspace**

Element  
bit size: 1  
Values:

**0:** Conflict not predicted to occur in military airspace

**1:** Conflict predicted to occur in military airspace

#### **I004/120/CN/CAS - Conflict Location in Civil Airspace**

Element

bit size: 1

Values:

**0:** Conflict not predicted to occur in civil airspace

**1:** Conflict predicted to occur in civil airspace

#### **I004/120/CN/FLD - Fast Lateral Divergence**

Element

bit size: 1

Values:

**0:** Aircraft are not fast diverging laterally at current time

**1:** Aircraft are fast diverging laterally at current time

#### **I004/120/CN/FVD - Fast Vertical Divergence**

Element

bit size: 1

Values:

**0:** Aircraft are not fast diverging vertically at current time

**1:** Aircraft are fast diverging vertically at current time

#### **I004/120/CN/TYPE - Type of Separation Infringement**

Element

bit size: 1

Values:

**0:** Minor separation infringement

**1:** Major separation infringement

#### **I004/120/CN/CROSS - Crossing Test**

Element

bit size: 1

Values:

**0:** Aircraft have not crossed at starting time of conflict

**1:** Aircraft have crossed at starting time of conflict

#### **I004/120/CN/DIV - Divergence Test**

Element

bit size: 1

Values:

**0:** Aircraft are not diverging at starting time of conflict

**1:** Aircraft are diverging at starting time of conflict

*(FX) - extension bit*

#### **I004/120/CN/RRC - Runway/Runway Crossing in RIMCAS**

Element

bit size: 1

Values:

**0:** Default

**1:** Runway/Runway Crossing

#### **I004/120/CN/RTC - Runway/Taxiway Crossing in RIMCAS**

Element

bit size: 1

Values:

- 0:** Default
- 1:** Runway/Taxiway Crossing

#### **I004/120/CN/MRVA**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 4 (MSAW) indicates MRVA

**I004/120/CN/VRAMCRM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 25 (VRAM) indicates CRM

#### **I004/120/CN/VRAMVRM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 25 (VRAM) indicates VRM

#### **I004/120/CN/VRAMVTM**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 25 (VRAM) indicates VTM

#### **I004/120/CN/HAMHD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 29 (HAM) indicates HD

*(FX) - extension bit*

#### **I004/120/CN/HAMRD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 29 (HAM) indicates RD

#### **I004/120/CN/HAMVD**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 29 (HAM) indicates VD

#### **I004/120/CN/DBPSMARR**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Msg Type 20 (DBPSM) indicates ARR

#### **I004/120/CN/DBPSMDEP**

Element  
bit size: 1  
Values:

**0:** Default

**1:** Msg Type 20 (DBPSM) indicates DEP

#### **I004/120/CN/DBPSMTL**

Element

bit size: 1

Values:

**0:** Default

**1:** Msg Type 20 (DBPSM) indicates above TL

#### **I004/120/CN/AIW**

Element

bit size: 1

Values:

**0:** Default

**1:** Msg Type 99 (AIW) indicates pAIW Alert

Spare bits: 1

*(FX) - extension bit*

### **I004/120/CC - Conflict Classification**

description: Severity classification of the conflict

Group

#### **I004/120/CC/TID - Identification of Conflict Categories**

##### **Definition Table**

Element

bit size: 4

Raw Content

#### **I004/120/CC/CPC - Conflict Properties Class**

Depending on: (000, 120/CC/TID)

**(5, 1):** Element

bit size: 3

Values:

**0:** APW Low Severity

**1:** APW Medium Severity

**2:** APW High Severity

**(7, 0):** Element

bit size: 3

Values:

**1:** Major separation infringement and not  
(crossed and diverging)

**2:** Minor separation infringement and not  
(crossed and diverging)

**3:** Major separation infringement and  
(crossed and diverging)

**4:** Minor separation infringement and  
(crossed and diverging)

**(7, 1):** Group

#### **I004/120/CC/CPC/LPF - Linear Prediction**

##### **Filter**

Element

bit size: 1

Values:

**0:** Filter not set

**1:** Filter set

#### **I004/120/CC/CPC/CPF - Current Proximity**

##### **Filter**

Element

bit size: 1

Values:

- 0:** Filter not set
- 1:** Filter set

**I004/120/CC/CPC/MHF - Manoeuvre Hazard Filter**

Element  
bit size: 1  
Values:

- 0:** Filter not set
- 1:** Filter set

**(9, 2):** Group

**I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(10, 2):** Group

**I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(11, 2):** Group

**I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(12, 2):** Group

**I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(13, 2):** Group

**I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(14, 2):** Group

**I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(15, 2):** Group

#### **I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(16, 2):** Group

#### **I004/120/CC/CPC/RAS - RIMCAS Alert Stage**

Element  
bit size: 1  
Values:

- 0:** Stage One Alert
- 1:** Stage Two Alert

Spare bits: 2

**(15, 1):** Element

bit size: 3  
Values:

- 0:** 2 aircraft, same taxiway, opposite direction
- 1:** Aircraft entering wrong direction
- 2:** Aircraft entering wrong taxiway
- 3:** Speed violation

**(24, 1):** Element

bit size: 3  
Values:

- 0:** VRM Slow Climb
- 1:** VRM Slow Descent

**(24, 2):** Element

bit size: 3  
Values:

- 0:** VTM Fast Climb
- 1:** VTM Fast Descent

**(26, 1):** Element

bit size: 3  
Values:

- 0:** Vertical manoeuvre deviation prior to reaching its expected level
- 1:** Vertical manoeuvre deviation past its expected level

**(27, 1):** Element

bit size: 3  
Values:

- 0:** Slow Descent
- 1:** Fast Descent
- 2:** Slow Climb
- 3:** Fast Climb

**(27, 2):** Element

bit size: 3  
Values:

- 0:** Above
- 1:** Below

- (33, 1):** Element  
bit size: 3  
Values:
- 0:** Table - Single RWY Operation
  - 1:** MRS - Single RWY Operation
  - 2:** ROT - Single RWY Operation
  - 3:** GAP - Single RWY Operation
  - 4:** Table - Parallel RWY Operation
  - 5:** MRS - Parallel RWY Operation
  - 6:** ROT - Parallel RWY Operation
  - 7:** GAP - Parallel RWY Operation
- (34, 1):** Element  
bit size: 3  
Values:
- 0:** Table - Single RWY Operation
  - 1:** MRS - Single RWY Operation
  - 2:** ROT - Single RWY Operation
  - 3:** GAP - Single RWY Operation
  - 4:** Table - Parallel RWY Operation
  - 5:** MRS - Parallel RWY Operation
  - 6:** ROT - Parallel RWY Operation
  - 7:** GAP - Parallel RWY Operation
- (35, 1):** Element  
bit size: 3  
Values:
- 0:** End of Alert
  - 1:** Planned Alert
  - 2:** Alert on TABLE Indicator
  - 3:** Alert on MRS Indicator
  - 4:** Alert on ROT Indicator
  - 5:** Alert on GAP Indicator
- (38, 0):** Element  
bit size: 3  
Values:
- 0:** Line-Up vs. Line-Up
  - 1:** Line-Up vs. Cross or Enter
  - 2:** Line-Up vs. Take-Off
  - 3:** Line-Up vs. Landing
- (38, 1):** Element  
bit size: 3  
Values:
- 0:** Cross or Enter vs. Line-Up
  - 1:** Cross or Enter vs. Cross or Enter
  - 2:** Cross or Enter vs. Take-Off
  - 3:** Cross or Enter vs. Landing
- (38, 2):** Element  
bit size: 3  
Values:
- 0:** Take-Off vs. Line-Up
  - 1:** Take-Off vs. Cross or Enter
  - 2:** Take-Off vs. Take-Off
  - 3:** Take-Off vs. Landing
- (38, 3):** Element  
bit size: 3  
Values:
- 0:** Landing vs. Line-Up
  - 1:** Landing vs. Cross or Enter
  - 2:** Landing vs. Take-Off

**3:** Landing vs. Landing

**(38, 4):** Element

bit size: 3

Values:

**0:** Push-Back vs. Push-Back

**1:** Push-Back vs. Taxi

**(38, 5):** Element

bit size: 3

Values:

**0:** Taxi vs. Push-Back

**1:** TAXi vs. Taxi

**(39, 1):** Element

bit size: 3

Values:

**0:** No Push-Back Clearance

**1:** No Taxi Clearance

**2:** No Line-Up Clearance

**3:** No Crossing Clearance

**4:** No Enter Clearance

**5:** No Take-Off Clearance

**6:** Landing Clearance

**(40, 1):** Element

bit size: 3

Values:

**0:** After Push-Back Clearance

**1:** After Taxi Clearance

**2:** After Line-Up Clearance

**3:** After Crossing Clearance

**4:** After Enter Clearance

**5:** After Take-Off Clearance

**6:** Stationary on Runway

**7:** Stationary on Taxiway

**(41, 1):** Element

bit size: 3

Values:

**0:** No contact (receiving ATSU)

**1:** No transfer (leaving ATSU)

**(45, 1):** Group

#### **I004/120/CC/CPC/LFP - Linear Prediction**

##### **Filter**

Element

bit size: 1

Values:

**0:** Filter not set

**1:** Filter set

Spare bits: 1

#### **I004/120/CC/CPC/MSM - Mode S Manoeuvre/Prediction Filter**

Element

bit size: 1

Values:

**0:** Filter not set

**1:** Filter set

Default:

Element

bit size: 3

Raw Content

### **I004/120/CC/CS - Conflict Severity**

Element  
bit size: 1  
Values:

**0:** LOW  
**1:** HIGH

### **I004/120/CP - Conflict Probability**

description: Probability of the conflict

Element  
bit size: 8  
Unsigned quantity  
LSB =  $1/2\% \approx 0.5\%$   
unit: "%"

### **I004/120/CD - Conflict Duration**

description: The duration of the conflict is the elapsed time since the declaration of the conflict.

Element  
bit size: 24  
Unsigned quantity  
LSB =  $1/2^7\text{ s} \approx 7.8125e-3\text{ s}$   
unit: "s"

**Note:** If no Table Id is defined for a message type, only the value of the CS bit may be of relevance. In that case, for this message type, Table Id and Conflict Properties are meaningless and shall be set to "0000" and "000" respectively. 1. Additional conflict classes may be defined by introducing additional properties of a conflict. 2. For FTD (Message Type = 033), ITD (Message Type = 034) and IIA (Message Type = 035) the following types of separation have been applied: Table: application of the values contained in the separation table according to the different wake vortex categories of the two aircraft. MRS: Minimum Radar Separation for the arrival runway ROT: Runway Occupancy Time – separation to achieve a specific ROT. GAP: separation based on a gap manually input by the ATCO

## **I004/170 - Aircraft Identification and Characteristics 1**

definition: Identification & Characteristics of Aircraft 1 Involved in the Conflict.  
Compound

### **I004/170/AI1 - Aircraft Identifier (in 7 Characters) of Aircraft 1 Involved in the Conflict**

Element  
bit size: 56  
Ascii string (8-bits per char)

### **I004/170/M31 - Mode 3/A Code Aircraft 1**

Group

Spare bits: 4

### **I004/170/M31/MODE3A - Mode-3/A Code (Converted Into Octal Representation) of Aircraft 1 Involved in the Conflict**

Element  
bit size: 12  
Octal string (3-bits per char)

### **I004/170/CPW - Predicted Conflict Position Target 1 in WGS-84 Coordinates**

Group

**I004/170/CPW/LAT - Latitude in WGS-84 in Two's Complement**

Element  
bit size: 32  
Signed quantity  
 $\text{LSB} = 180/2^25 \text{ }^\circ \approx 5.36441802978515625e - 6 \text{ }^\circ$   
unit: "°"  
 $\geq -90.0$   
 $\leq 90.0$

**I004/170/CPW/LON - Longitude in WGS-84 in Two's Complement**

Element  
bit size: 32  
Signed quantity  
 $\text{LSB} = 180/2^25 \text{ }^\circ \approx 5.36441802978515625e - 6 \text{ }^\circ$   
unit: "°"  
 $\geq -180.0$   
 $< 180.0$

**I004/170/CPW/ALT - Altitude of Predicted Conflict**

Element  
bit size: 16  
Signed quantity  
 $\text{LSB} = 25 \text{ ft} \approx 25.0 \text{ ft}$   
unit: "ft"  
 $\geq -1500.0$   
 $\leq 150000.0$

**I004/170/CPC - Predicted Conflict Position for the Aircraft 1 Involved in the Conflict**

Group

**I004/170/CPC/X - Starting X-position of the Conflict**

Element  
bit size: 24  
Signed quantity  
 $\text{LSB} = 1/2 \text{ m} \approx 0.5 \text{ m}$   
unit: "m"

**I004/170/CPC/Y - Starting Y-position of the Conflict**

Element  
bit size: 24  
Signed quantity  
 $\text{LSB} = 1/2 \text{ m} \approx 0.5 \text{ m}$   
unit: "m"

**I004/170/CPC/Z - Starting Z-position of the Conflict**

Element  
bit size: 16  
Signed quantity  
 $\text{LSB} = 25 \text{ ft} \approx 25.0 \text{ ft}$   
unit: "ft"  
 $\geq -1500.0$   
 $\leq 150000.0$

**I004/170/TT1 - Time to Runway Threshold for First Approaching Aircraft in a RIMCA**

Element  
bit size: 24  
Unsigned quantity  
 $\text{LSB} = 1/2^7 \text{ s} \approx 7.8125e - 3 \text{ s}$   
unit: "s"

**I004/170/DT1 - Distance to Runway Threshold for Aircraft 1 Involved in a RIMCA**

Element  
bit size: 16  
Unsigned quantity  
LSB = 1/2 m ≈ 0.5 m  
unit: "m"

**I004/170/AC1 - Characteristics of Aircraft 1 Involved in the Conflict**

Extended

**I004/170/AC1/GATOAT - Identification of Conflict Categories Definition Table**

Element  
bit size: 2  
Values:  
**0:** Unknown  
**1:** General Air Traffic  
**2:** Operational Air Traffic  
**3:** Not applicable

**I004/170/AC1/FR1FR2 - Flight Rules**

Element  
bit size: 2  
Values:  
**0:** Instrument Flight Rules  
**1:** Visual Flight Rules  
**2:** Not applicable  
**3:** Controlled Visual Flight Rules

**I004/170/AC1/RVSM**

Element  
bit size: 2  
Values:  
**0:** Unknown  
**1:** Approved  
**2:** Exempt  
**3:** Not Approved

**I004/170/AC1/HPR**

Element  
bit size: 1  
Values:  
**0:** Normal Priority Flight  
**1:** High Priority Flight

*(FX) - extension bit*

**I004/170/AC1/CDM - Climbing/Descending Mode**

Element  
bit size: 2  
Values:  
**0:** Maintaining  
**1:** Climbing  
**2:** Descending  
**3:** Invalid

**I004/170/AC1/PRI**

Element  
bit size: 1  
Values:  
**0:** Non primary target  
**1:** Primary target

**I004/170/AC1/GV**

Element  
bit size: 1  
Values:  
**0:** Default  
**1:** Ground Vehicle

Spare bits: 3  
(FX) - extension bit

#### **I004/170/MS1 - Aircraft Identification Downloaded from Aircraft 1 Involved in the Conflict If Equipped with a Mode-S Transponder**

Element  
bit size: 48  
ICAO string (6-bits per char)

#### **I004/170/FP1 - Number of the Flight Plan Correlated to Aircraft 1 Involved in the Conflict**

Group  
Spare bits: 5

**I004/170/FP1/NBR**  
Element  
bit size: 27  
Unsigned quantity  
LSB = 1 ≈ 1.0  
unit: ""  
≥ 0.0  
≤ 9.999999e7

#### **I004/170/CF1 - Cleared Flight Level for Aircraft 1 Involved in the Conflict**

Element  
bit size: 16  
Unsigned quantity  
LSB = 1/2<sup>2</sup> FL ≈ 0.25 FL  
unit: "FL"

Notes:

1. The aircraft identifier is always left adjusted. If needed, the remaining characters are filled with space character.
2. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the aircraft identifier of the following aircraft.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the aircraft identifier of the following aircraft.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the aircraft identifier of the following aircraft.
5. For Message Type = 37 (Catch-Up Warning - CUW) this contains the aircraft identifier of the following aircraft (i.e. the one catching up).
6. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode 3/A Code of the following aircraft.
7. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode 3/A Code of the following aircraft.
8. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode 3/A Code of the following aircraft.
9. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode 3/A code of the following aircraft (i.e. the one catching up).
10. Altitude expressed in two's complement.
11. For Message Type = 33 (Final Target Distance Indicator - FTD) this data item contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
12. For Message Type = 34 (Initial Target Distance Indicator - ITD) this data item contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.

13. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this data item contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
14. For Message Type = 37 (Catch-Up Warning - CUW) this contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
15. Two's complement fixed-point format.
16. For Message Type = 33 (Final Target Distance Indicator - FTD) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
17. For Message Type = 34 (Initial Target Distance Indicator - ITD) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
18. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
19. For Message Type = 37 (Catch-Up Warning - CUW) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
20. Time to Threshold expressed in Two's Complement
21. For Message Type = 33 (Final Target Distance Indicator - FTD) and for Message Type = 34 (Initial Target Distance Indicator - ITD) this data item contains the additional gap in spacing between two approaching aircraft as manually inserted by the ATCO. This could be used, for example, to increase the spacing between approaching aircraft in order to generate sufficient spacing to clear a departing aircraft.
22. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Aircraft Characteristics of the following aircraft.
23. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Aircraft Characteristics of the following aircraft.
24. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Aircraft Characteristics of the following aircraft.
25. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Aircraft Characteristics of the following aircraft.
26. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode-S Identifier of the following aircraft.
27. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode-S Identifier of the following aircraft.
28. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode-S Identifier of the following aircraft.
29. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode-S Identifier of the following aircraft.
30. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Flight Plan Number of the following aircraft.
31. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Flight Plan Number of the following aircraft.
32. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Flight Plan Number of the following aircraft.
33. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Flight Plan Number of the following aircraft.
34. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Cleared Flight Level of the following aircraft.
35. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Cleared Flight Level of the following aircraft.
36. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Cleared Flight Level of the following aircraft.
37. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Cleared Flight Level of the following aircraft.

definition: Identification & Characteristics of Aircraft 2 Involved in the Conflict.  
Compound

**I004/171/AI2 - Aircraft Identifier (in 7 Characters) of Aircraft 2 Involved in the Conflict**

Element  
bit size: 56  
Ascii string (8-bits per char)

**I004/171/M32 - Mode 3/A Code Aircraft 2**

Group

Spare bits: 4

**I004/171/M32/MODE3A - Mode-3/A Code (Converted Into Octal Representation) of Aircraft 2 Involved in the Conflict**

Element  
bit size: 12  
Octal string (3-bits per char)

**I004/171/CPW - Predicted Conflict Position Target 2 in WGS-84 Coordinates**

Group

**I004/171/CPW/LAT - Latitude in WGS-84 in Two's Complement**

Element  
bit size: 32  
Signed quantity  
 $LSB = 180/2^{25} \approx 5.36441802978515625e - 6^\circ$   
unit: "°"  
 $\geq -90.0$   
 $\leq 90.0$

**I004/171/CPW/LON - Longitude in WGS-84 in Two's Complement**

Element  
bit size: 32  
Signed quantity  
 $LSB = 180/2^{25} \approx 5.36441802978515625e - 6^\circ$   
unit: "°"  
 $\geq -180.0$   
 $< 180.0$

**I004/171/CPW/ALT - Altitude of Predicted Conflict**

Element  
bit size: 16  
Signed quantity  
 $LSB = 25 \text{ ft} \approx 25.0 \text{ ft}$   
unit: "ft"  
 $\geq -1500.0$   
 $\leq 150000.0$

**I004/171/CPL - Predicted Conflict Position for the Aircraft 2 Involved in the Conflict**

Group

**I004/171/CPL/X - Starting X-position of the Conflict**

Element  
bit size: 24  
Signed quantity  
 $LSB = 1/2 \text{ m} \approx 0.5 \text{ m}$   
unit: "m"

**I004/171/CPL/Y - Starting Y-position of the Conflict**

Element  
bit size: 24  
Signed quantity  
LSB =  $1/2$  m  $\approx$  0.5 m  
unit: "m"

**I004/171/CPL/Z - Starting Z-position of the Conflict**

Element  
bit size: 16  
Signed quantity  
LSB = 25 ft  $\approx$  25.0 ft  
unit: "ft"  
 $\geq -1500.0$   
 $\leq 150000.0$

**I004/171/TT2 - Time to Runway Threshold for Second Approaching Aircraft in a RIMCA**

Element  
bit size: 24  
Unsigned quantity  
LSB =  $1/2^7$  s  $\approx$  7.8125e – 3 s  
unit: "s"

**I004/171/DT2 - Distance to Runway Threshold for Aircraft 2 Involved in a RIMCA**

Element  
bit size: 16  
Unsigned quantity  
LSB =  $1/2$  m  $\approx$  0.5 m  
unit: "m"

**I004/171/AC2 - Characteristics of Aircraft 2 Involved in the Conflict**

Extended

**I004/171/AC2/GATOAT - Identification of Conflict Categories Definition Table**

Element  
bit size: 2  
Values:  
**0:** Unknown  
**1:** General Air Traffic  
**2:** Operational Air Traffic  
**3:** Not applicable

**I004/171/AC2/FR1FR2 - Flight Rules**

Element  
bit size: 2  
Values:  
**0:** Instrument Flight Rules  
**1:** Visual Flight rules  
**2:** Not applicable  
**3:** Controlled Visual Flight Rules

**I004/171/AC2/RVSM**

Element  
bit size: 2  
Values:  
**0:** Unknown  
**1:** Approved  
**2:** Exempt  
**3:** Not Approved

**I004/171/AC2/HPR**

Element  
bit size: 1  
Values:  
  **0**: Normal Priority Flight  
  **1**: High Priority Flight  
*(FX) - extension bit*

**I004/171/AC2/CDM - Climbing/Descending Mode**

Element  
bit size: 2  
Values:  
  **0**: Maintaining  
  **1**: Climbing  
  **2**: Descending  
  **3**: Invalid

**I004/171/AC2/PRI**

Element  
bit size: 1  
Values:  
  **0**: Non primary target  
  **1**: Primary target

**I004/171/AC2/GV**

Element  
bit size: 1  
Values:  
  **0**: Default  
  **1**: Ground Vehicle

Spare bits: 3

*(FX) - extension bit*

**I004/171/MS2 - Aircraft Identification Downloaded From Aircraft 2 Involved in the Conflict If Eequipped With a Mode-S Transponder**

Element  
bit size: 48  
ICAO string (6-bits per char)

**I004/171/FP2 - Number of the Flight Plan Correlated to Aircraft 2 Involved in the Conflict**

Group  
Spare bits: 5

**I004/171/FP2/NBR**

Element  
bit size: 27  
Unsigned quantity  
LSB = 1 ≈ 1.0  
unit: ""  
>= 0.0  
≤ 9.999999e7

**I004/171/CF2 - Cleared Flight Level for Aircraft 2 Involved in the Conflict**

Element  
bit size: 16  
Unsigned quantity  
LSB = 1/2<sup>2</sup> FL ≈ 0.25 FL  
unit: "FL"

Notes:

1. The aircraft identifier is always left adjusted. If needed, the remaining characters are filled with space character.

2. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the aircraft identifier of the leading aircraft.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the aircraft identifier of the leading aircraft.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the aircraft identifier of the leading aircraft.
5. For Message Type = 37 (Catch-Up Warning - CUW) this contains the aircraft identifier of the leading aircraft.
6. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode 3/A Code of the leading aircraft.
7. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode 3/A Code of the leading aircraft.
8. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode 3/A Code of the leading aircraft.
9. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode 3/A code of the leading aircraft.
10. Altitude expressed in two's complement.
11. FTwo's complement.
12. Time to Threshold expressed in Two's Complement
13. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Aircraft Characteristics of the leading aircraft.
14. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Aircraft Characteristics of the leading aircraft.
15. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Aircraft Characteristics of the leading aircraft.
16. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Aircraft Characteristics of the leading aircraft.
17. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode-S Identifier of the leading aircraft.
18. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode-S Identifier of the leading aircraft.
19. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode-S Identifier of the leading aircraft.
20. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode-S Identifier of the leading aircraft.
21. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Flight Plan Number of the leading aircraft.
22. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Flight Plan Number of the leading aircraft.
23. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Flight Plan Number of the leading aircraft.
24. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Flight Plan Number of the leading aircraft.
25. The value shall be within the range described by ICAO Annex 10
26. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Cleared Flight Level of the leading aircraft.
27. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Cleared Flight Level of the leading aircraft.
28. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Cleared Flight Level of the leading aircraft.
29. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Cleared Flight Level of the leading aircraft.

#### **I004/RE - Reserved Expansion Field**

definition: Expansion  
 Explicit (ReservedExpansion)

#### **I004/SP - Special Purpose Field**

definition: Special Purpose Field  
Explicit (SpecialPurpose)

## User Application Profile

- 1: I004/010 - Data Source Identifier
- 2: I004/000 - Message Type
- 3: I004/015 - SDPS Identifier
- 4: I004/020 - Time of Message
- 5: I004/040 - Alert Identifier
- 6: I004/045 - Area and Alert Status
- 7: I004/060 - Safety Net Function and System Status
- (FX) - Field extension indicator
- 8: I004/030 - Track Number 1
- 9: I004/170 - Aircraft Identification and Characteristics 1
- 10: I004/120 - Conflict Characteristics
- 11: I004/070 - Conflict Timing and Separation
- 12: I004/076 - Vertical Deviation
- 13: I004/074 - Longitudinal Deviation
- 14: I004/075 - Transversal Distance Deviation
- (FX) - Field extension indicator
- 15: I004/100 - Area Definition
- 16: I004/035 - Track Number 2
- 17: I004/171 - Aircraft Identification and Characteristics 2
- 18: I004/110 - FDPS Sector Control Identification
- *Spare*
- 20: I004/RE - Reserved Expansion Field
- 21: I004/SP - Special Purpose Field
- (FX) - Field extension indicator