

# Asterix category 034 - Transmission of Monoradar Service Messages

**category:** 034

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## Preamble

Surveillance data exchange.

## Description of standard data items

### I034/000 - 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: North marker message
- 2: Sector crossing message
- 3: Geographical filtering message
- 4: Jamming strobe message
- 5: Solar Storm Message
- 6: SSR Jamming Strobe Message
- 7: Mode S Jamming Strobe Message

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. The list of items present for the four message types is defined in the following table.  
M stands for mandatory, O for optional, X for never present.  
TODO: message types table

### I034/010 - Data Source Identifier

definition: Identification of the radar station from which the data are received.

Group

#### I034/010/SAC - System Area Code

Element

bit size: 8

Raw Content

#### I034/010/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>).

**I034/020 - Sector Number**

definition: Eight most significant bits of the antenna azimuth defining a particular azimuth sector.

Element

bit size: 8

Unsigned quantity

LSB =  $360/2^8$  °  $\approx 1.40625$  °

unit: "°"

**I034/030 - Time of Day**

definition: Absolute time stamping expressed as UTC time.

Element

bit size: 24

Unsigned quantity

LSB =  $1/2^7$  s  $\approx 7.8125e-3$  s

unit: "s"

Notes:

- The time of day value is reset to zero each day at midnight.

**I034/041 - Antenna Rotation Speed**

definition: Antenna rotation period as measured between two consecutive North crossings or as averaged during a period of time.

Element

bit size: 16

Unsigned quantity

LSB =  $1/2^7$  s  $\approx 7.8125e-3$  s

unit: "s"

Notes:

- This item represents the antenna rotation period as measured by the radar station between two consecutive North crossings, or a calculated antenna rotation speed as averaged during a period of time, or during a number of antenna rotation scans.

**I034/050 - System Configuration and Status**

definition: Information concerning the configuration and status of a System.

Compound

**I034/050/COM - Common Part**

Group

**I034/050/COM/NOGO - Operational Release Status of the System**

Element

bit size: 1

Values:

0: System is released for operational use

1: Operational use of System is inhibited, i.e. the data shall be discarded by an operational SDPS

#### **I034/050/COM/RDPC - Radar Data Processor Chain Selection Status**

Element

bit size: 1

Values:

0: RDPC-1 selected

1: RDPC-2 selected

#### **I034/050/COM/RDPR - Event to Signal a Reset/restart of the Selected Radar Data Processor Chain, I.e. Expect a New Assignment of Track Numbers**

Element

bit size: 1

Values:

0: Default situation

1: Reset of RDPC

#### **I034/050/COM/OVLRDP - Radar Data Processor Overload Indicator**

Element

bit size: 1

Values:

0: Default, no overload

1: Overload in RDP

#### **I034/050/COM/OVLXMT - Transmission Subsystem Overload Status**

Element

bit size: 1

Values:

0: Default, no overload

1: Overload in transmission subsystem

#### **I034/050/COM/MSC - Monitoring System Connected Status**

Element

bit size: 1

Values:

0: Monitoring system connected

1: Monitoring system disconnected

#### **I034/050/COM/TSV - Time Source Validity**

Element

bit size: 1

Values:

0: Valid

1: Invalid

Spare bits: 1

*Spare*

*Spare*

#### **I034/050/PSR - Specific Status Information for a PSR Sensor**

Group

##### **I034/050/PSR/ANT - Selected Antenna**

Element  
bit size: 1  
Values:  
    **0:** Antenna 1  
    **1:** Antenna 2

**I034/050/PSR/CHAB - Channel A/B Selection Status**

Element  
bit size: 2  
Values:  
    **0:** No channel selected  
    **1:** Channel A only selected  
    **2:** Channel B only selected  
    **3:** Diversity mode ; Channel A and B selected

**I034/050/PSR/OVL - Overload Condition**

Element  
bit size: 1  
Values:  
    **0:** No overload  
    **1:** Overload

**I034/050/PSR/MSC - Monitoring System Connected Status**

Element  
bit size: 1  
Values:  
    **0:** Monitoring system connected  
    **1:** Monitoring system disconnected

Spare bits: 3

**I034/050/SSR - Specific Status Information for a SSR Sensor**

Group

**I034/050/SSR/ANT - Selected Antenna**

Element  
bit size: 1  
Values:  
    **0:** Antenna 1  
    **1:** Antenna 2

**I034/050/SSR/CHAB - Channel A/B Selection Status**

Element  
bit size: 2  
Values:  
    **0:** No channel selected  
    **1:** Channel A only selected  
    **2:** Channel B only selected  
    **3:** Invalid combination

**I034/050/SSR/OVL - Overload Condition**

Element  
bit size: 1  
Values:  
    **0:** No overload  
    **1:** Overload

**I034/050/SSR/MSC - Monitoring System Connected Status:**

Element  
bit size: 1  
Values:  
    **0:** Monitoring system connected

1: Monitoring system disconnected

Spare bits: 3

## **I034/050/MDS - Specific Status Information for a Mode S Sensor**

Group

### **I034/050/MDS/ANT - Selected Antenna**

Element

bit size: 1

Values:

0: Antenna 1

1: Antenna 2

### **I034/050/MDS/CHAB - Channel A/B Selection Status**

Element

bit size: 2

Values:

0: No channel selected

1: Channel A only selected

2: Channel B only selected

3: Illegal combination

### **I034/050/MDS/OVLSUR - Overload Condition**

Element

bit size: 1

Values:

0: No overload

1: Overload

### **I034/050/MDS/MSC - Monitoring System Connected Status:**

Element

bit size: 1

Values:

0: Monitoring system connected

1: Monitoring system disconnected

### **I034/050/MDS/SCF - Channel A/B Selection Status for Surveillance Co-ordination Function**

Element

bit size: 1

Values:

0: Channel A in use

1: Channel B in use

### **I034/050/MDS/DLF - Channel A/B Selection Status for Data Link Function**

Element

bit size: 1

Values:

0: Channel A in use

1: Channel B in use

### **I034/050/MDS/OVLSCF - Overload in Surveillance Co-ordination Function**

Element

bit size: 1

Values:

0: No overload

1: Overload

### **I034/050/MDS/OVLDLF - Overload in Data Link Function**

Element

bit size: 1

Values:

**0:** No overload

**1:** Overload

Spare bits: 7

## **I034/060 - System Processing Mode**

definition: Status concerning the processing options, in use during the last antenna revolution, for the various Sensors, composing the System.

Compound

### **I034/060/COM - Common Part**

Group

Spare bits: 1

#### **I034/060/COM/REDRDP - Reduction Steps in Use for An Overload of the RDP**

Element

bit size: 3

Values:

**0:** No reduction active

**1:** Reduction step 1 active

**2:** Reduction step 2 active

**3:** Reduction step 3 active

**4:** Reduction step 4 active

**5:** Reduction step 5 active

**6:** Reduction step 6 active

**7:** Reduction step 7 active

#### **I034/060/COM/REDXMT - Reduction Steps in Use for An Overload of the Transmission Subsystem**

Element

bit size: 3

Values:

**0:** No reduction active

**1:** Reduction step 1 active

**2:** Reduction step 2 active

**3:** Reduction step 3 active

**4:** Reduction step 4 active

**5:** Reduction step 5 active

**6:** Reduction step 6 active

**7:** Reduction step 7 active

Spare bits: 1

*Spare*

*Spare*

### **I034/060/PSR - Specific Processing Mode Information for a PSR Sensor**

Group

#### **I034/060/PSR/POL - Polarization in Use by PSR**

Element

bit size: 1

Values:

**0:** Linear polarization

**1:** Circular polarization

#### **I034/060/PSR/REDRAD - Reduction Steps in Use as Result of An Overload Within the PSR Subsystem**

Element

bit size: 3

Values:

- 0: No reduction active
- 1: Reduction step 1 active
- 2: Reduction step 2 active
- 3: Reduction step 3 active
- 4: Reduction step 4 active
- 5: Reduction step 5 active
- 6: Reduction step 6 active
- 7: Reduction step 7 active

#### **I034/060/PSR/STC - Sensitivity Time Control Map in Use**

Element

bit size: 2

Values:

- 0: STC Map-1
- 1: STC Map-2
- 2: STC Map-3
- 3: STC Map-4

Spare bits: 2

#### **I034/060/SSR - Specific Processing Mode Information for a SSR Sensor**

Group

##### **I034/060/SSR/REDRAD - Reduction Steps in Use as Result of An Overload Within the SSR Subsystem**

Element

bit size: 3

Values:

- 0: No reduction active
- 1: Reduction step 1 active
- 2: Reduction step 2 active
- 3: Reduction step 3 active
- 4: Reduction step 4 active
- 5: Reduction step 5 active
- 6: Reduction step 6 active
- 7: Reduction step 7 active

Spare bits: 5

#### **I034/060/MDS - Specific Processing Mode Information for a Mode S Sensor**

Group

##### **I034/060/MDS/REDRAD - Reduction Steps in Use as Result of An Overload Within the Mode S Subsystem**

Element

bit size: 3

Values:

- 0: No reduction active
- 1: Reduction step 1 active
- 2: Reduction step 2 active
- 3: Reduction step 3 active
- 4: Reduction step 4 active
- 5: Reduction step 5 active
- 6: Reduction step 6 active
- 7: Reduction step 7 active

##### **I034/060/MDS/CLU - Cluster State**

Element

bit size: 1

Values:

- 0: Autonomous
- 1: Not autonomous

Spare bits: 4

Notes:

- Applicable to all defined secondary subfields. The actual mapping between the up to seven data reduction steps and their associated data reduction measures is not subject to standardisation.

### **I034/070 - Message Count Values**

definition: Message Count values, according the various types of messages, for the last completed antenna revolution, counted between two North crossings

Repetitive

Regular, 1 byte(s) REP field size.

Group

#### **I034/070/TYP - Type of Message Counter**

Element

bit size: 5

Values:

- 0:** No detection (number of misses)
- 1:** Single PSR target reports
- 2:** Single SSR target reports (Non-Mode S)
- 3:** SSR+PSR target reports (Non-Mode S)
- 4:** Single All-Call target reports (Mode S)
- 5:** Single Roll-Call target reports (Mode S)
- 6:** All-Call + PSR (Mode S) target reports
- 7:** Roll-Call + PSR (Mode S) target reports
- 8:** Filter for Weather data
- 9:** Filter for Jamming Strobe
- 10:** Filter for PSR data
- 11:** Filter for SSR/Mode S data
- 12:** Filter for SSR/Mode S+PSR data
- 13:** Filter for Enhanced Surveillance data
- 14:** Filter for PSR+Enhanced Surveillance
- 15:** Filter for PSR+Enhanced Surveillance + SSR/Mode S data not in Area of Prime Interest
- 16:** Filter for PSR+Enhanced Surveillance + all SSR/Mode S data
- 17:** Re-Interrogations (per sector)
- 18:** BDS Swap and wrong DF replies(per sector)
- 19:** Mode A/C FRUIT (per sector)
- 20:** Mode S FRUIT (per sector)

#### **I034/070/COUNT - COUNTER**

Element

bit size: 11

Unsigned integer

### **I034/090 - Collimation Error**

definition: Averaged difference in range and in azimuth for the primary target position with respect to the SSR target position as calculated by the radar station.

Group

#### **I034/090/RNG - Range Error**

Element

bit size: 8

Signed quantity

LSB =  $1/2^7$  NM  $\approx 7.8125e-3$  NM

unit: "NM"



### **I034/090/AZM - Azimuth Error**

Element  
bit size: 8  
Signed quantity  
 $\text{LSB} = 360/2^{14} \text{ }^\circ \approx 2.197265625e-2 \text{ }^\circ$   
unit: "°"

Notes:

- Negative values are coded in two's complement form.

### **I034/100 - Generic Polar Window**

definition: Geographical window defined in polar co-ordinates.

Group

#### **I034/100/RHOST - Rho Start**

Element  
bit size: 16  
Unsigned quantity  
 $\text{LSB} = 1/2^8 \text{ NM} \approx 3.90625e-3 \text{ NM}$   
unit: "NM"  
 $\leq 256.0$

#### **I034/100/RHOEND - Rho End**

Element  
bit size: 16  
Unsigned quantity  
 $\text{LSB} = 1/2^8 \text{ NM} \approx 3.90625e-3 \text{ NM}$   
unit: "NM"  
 $\leq 256.0$

#### **I034/100/THETAST - Theta Start**

Element  
bit size: 16  
Unsigned quantity  
 $\text{LSB} = 360/2^{16} \text{ }^\circ \approx 5.4931640625e-3 \text{ }^\circ$   
unit: "°"

#### **I034/100/THETAEND - Theta End**

Element  
bit size: 16  
Unsigned quantity  
 $\text{LSB} = 360/2^{16} \text{ }^\circ \approx 5.4931640625e-3 \text{ }^\circ$   
unit: "°"

### **I034/110 - Data Filter**

definition: Data Filter, which allows suppression of individual data types.

Element  
bit size: 8  
Values:

- 0:** Invalid value
- 1:** Filter for Weather data
- 2:** Filter for Jamming Strobe
- 3:** Filter for PSR data
- 4:** Filter for SSR/Mode S data
- 5:** Filter for SSR/Mode S + PSR data

- 6: Enhanced Surveillance data
- 7: Filter for PSR+Enhanced Surveillance data
- 8: Filter for PSR+Enhanced Surveillance + SSR/Mode S data not in Area of Prime Interest
- 9: Filter for PSR+Enhanced Surveillance + all SSR/Mode S data

Notes:

1. This Data Item is often used in conjunction with I034/100 and represents a Data Filter for a specific geographical subarea. A Data Source may have zero, one or multiple data filters active at any time.
2. If I034/110 is not accompanied with I034/100, then the Data Filter is valid throughout the total area of coverage.

## **I034/120 - 3D-Position Of Data Source**

definition: 3D-Position of Data Source in WGS 84 Co-ordinates

Group

### **I034/120/HGT - Height of Data Source**

Element  
bit size: 16  
Signed quantity  
LSB = 1 m  $\approx$  1.0 m  
unit: "m"

### **I034/120/LAT - Latitude**

Element  
bit size: 24  
Signed quantity  
LSB =  $180/2^{23} \text{ }^\circ \approx 2.1457672119140625e-5 \text{ }^\circ$   
unit: "°"  
>= -90.0  
<= 90.0

### **I034/120/LON - Longitude**

Element  
bit size: 24  
Signed quantity  
LSB =  $180/2^{23} \text{ }^\circ \approx 2.1457672119140625e-5 \text{ }^\circ$   
unit: "°"  
>= -180.0  
<= 180.0

## **I034/RE - Reserved Expansion Field**

definition: Expansion

Explicit (ReservedExpansion)

## **I034/SP - Special Purpose Field**

definition: Special Purpose Field

Explicit (SpecialPurpose)

## **User Application Profile**

- 1: I034/010 - Data Source Identifier
- 2: I034/000 - Message Type
- 3: I034/030 - Time of Day
- 4: I034/020 - Sector Number
- 5: I034/041 - Antenna Rotation Speed
- 6: I034/050 - System Configuration and Status
- 7: I034/060 - System Processing Mode
- (FX) - Field extension indicator
- 8: I034/070 - Message Count Values
- 9: I034/100 - Generic Polar Window
- 10: I034/110 - Data Filter
- 11: I034/120 - 3D-Position Of Data Source
- 12: I034/090 - Collimation Error
- 13: I034/RE - Reserved Expansion Field
- 14: I034/SP - Special Purpose Field
- (FX) - Field extension indicator