Asterix category 034 - Transmission of Monoradar Service Messages

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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

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 = $360/2^8$ ° ≈ 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 ≈ $7.8125e-3$ 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 ≈ $7.8125e-3$ 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

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
LSB = $360/2^14$ ° $\approx 2.197265625e-2$ °
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
LSB = $1/2^8$ NM ≈ $3.90625e-3$ NM
unit: "NM"
<= 256.0

I034/100/RHOEND - Rho End

Element
bit size: 16
Unsigned quantity
LSB = $1/2^8$ NM ≈ $3.90625e-3$ NM
unit: "NM"
<= 256.0

I034/100/THETAST - Theta Start

Element
bit size: 16
Unsigned quantity
LSB = $360/2^16$ ° ≈ $5.4931640625e-3$ °
unit: "°"

I034/100/THETAEND - Theta End

Element
bit size: 16
Unsigned quantity
LSB = $360/2^16$ ° ≈ $5.4931640625e-3$ °
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 ≈ 1.0 m
unit: ”m”

I034/120/LAT - Latitude

Element
bit size: 24
Signed quantity
LSB = $180/2^23$ ° ≈ $2.1457672119140625e-5$ °
unit: ”°”
>= -90.0
<= 90.0

I034/120/LON - Longitude

Element
bit size: 24
Signed quantity
LSB = $180/2^23$ ° ≈ $2.1457672119140625e-5$ °
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