Asterix category 008 - Monoradar Derived Weather Information

category: 008

edition: 1.2

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Preamble

Surveillance data exchange.

Description of standard data items

I008/000 - 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:** Polar vector
- **2:** Cartesian vector of start point/length
- **3:** Contour record
- **4:** Cartesian start point and end point vector
- **254:** SOP message
- **255:** EOP message

I008/010 - Data Source Identifier

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

Group

I008/010/SAC - System Area Code

Element
bit size: 8
Raw Content

I008/010/SIC - System Identification Code

Element
bit size: 8
Raw Content

Note: The defined SACs are on the EUROCONTROL ASTERIX website (www.eurocontrol.int/asterix)

I008/020 - Vector Qualifier

definition: Precipitation intensity level, shading orientation of the vectors representing the precipitation area and coordinate system used.

Extended

I008/020/ORG

Element
bit size: 1
Values:

0: Local Coordinates
1: System Coordinates

I008/020/I - Intensity Level

Element
bit size: 3
Unsigned integer

I008/020/S - Shading Orientation with Respect to North

Element
bit size: 3
Values:

0: 0°
1: 22.5°
2: 45°
3: 67.5°
4: 90°
5: 112.5°
6: 135°
7: 157.5°

(FX) - extension bit
Spare bits: 5

I008/020/TST

Element
bit size: 1
Values:

0: Default
1: Test vector

I008/020/ER

Element
bit size: 1
Values:

0: Default
1: Error condition encountered

(FX) - extension bit

Note: For polar vectors bits-4/2 are meaningless and are set to zero.

I008/034 - Sequence of Polar Vectors in SPF Notation

definition: Sequence of weather vectors in local polar coordinates.
Repetitive
Regular, 1 byte(s) REP field size.
Group

I008/034/STR - Start Range

Element
bit size: 8
Unsigned integer
Adjust with scaling factor '100/F'

I008/034/ENDR - End Range

Element
bit size: 8
Unsigned integer
Adjust with scaling factor '100/F'

I008/034/AZ - Azimuth

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

Note: f is a parameter of the SOP message.

I008/036 - Sequence of Cartesian Vectors in SPF Notation

definition: Sequence of weather vectors, in the representation start point/length, in local or in system cartesian coordinates.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I008/036/X - X-Component

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

I008/036/Y - Y-Component

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

I008/036/LENGTH - Length

Element
bit size: 8
Unsigned integer
Adjust with scaling factor '100/F'

Note:

1. LSB of [X, Y, L] is calculated as 2^{-6+F}.
2. F is a parameter of the SOP message.
3. Negative values are expressed in 2's complement form, bit-24 and bit-16 are set to 0 for positive values and 1 for negative values.

I008/038 - Sequence of Weather Vectors in SPF Notation

definition: Sequence of weather vectors, in the representation start point/ end point, in local or in system cartesian coordinates.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I008/038/X1 - X1-Component

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

I008/038/Y1 - Y1-Component

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

I008/038/X2 - X2-Component

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

I008/038/Y2 - Y2-Component

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

Note:

1. LSB of [X1, Y1, X2, Y2] is calculated as 2^{-6+f}.
2. f is a parameter of the SOP message.
3. Negative values are expressed in 2's complement form, bits-32, 24, 16 and 8 are set to 0 for positive values and 1 for negative values.

I008/040 - Contour Identifier

definition: Contour serial number together with the precipitation intensity levels and the coordinates system used.

Group

I008/040/ORG

Element
bit size: 1
Values:

- **0:** Local Coordinates
- **1:** System Coordinates

I008/040/I - Intensity Level

Element
bit size: 3
Raw Content

Spare bits: 2

I008/040/FSTLST

Element
bit size: 2
Values:

- **0:** Intermediate record of a contour
- **1:** Last record of a contour of at least two records
- **2:** First record of a contour of at least two records
- **3:** First and only record, fully defining a contour

I008/040/CSN - Contour Serial Number

Element
bit size: 8
Raw Content

Note: The Contour Serial Number provides an unambiguous identification for each contour record. Within one update cycle, a serial number shall never be assigned twice.

I008/050 - Sequence of Contour Points in SPF Notation

definition: Cartesian coordinates of a variable number of points defining a contour.

Repetitive

Regular, 1 byte(s) REP field size.

Group

I008/050/X1

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

I008/050/Y1

Element
bit size: 8
Signed integer
Adjust with scaling factor '100/F'

Note:

1. LSB of [X1, Y1] is calculated as 2^{-6+f}.
2. f is a parameter of the SOP message.
3. Negative values are expressed in 2's complement form, bit-16 and bit-8 shall be set to 0 for positive values and 1 for negative values.

I008/090 - Time of Day

definition: Absolute time stamping expressed as Coordinated Universal Time (UTC) time.

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

Notes:

1. The time of day value is reset to zero each day at midnight.
2. For time management in radar transmission applications, refer to Part 1, paragraph 5.4 [Ref. 1].

I008/100 - Processing Status

definition: Information concerning the scaling factor currently applied, current reduction step in use, etc.

Extended

I008/100/F - Scaling Factor

Element
bit size: 5
Signed integer

I008/100/R - Current Reduction Stage in Use

Element
bit size: 3
Raw Content

I008/100/Q - Processing Parameters

Element
bit size: 15
Raw Content

(FX) - extension bit

Note: F: Scaling factor, negative values are represented in 2's complement form, bit-24 is set to 0 for positive values and 1 for negative values. R: Current reduction stage in use. Normal operation is indicated by a value of zero. The actual bit signification is application dependent. Q: Processing parameters. The actual bit signification isapplication dependent.

I008/110 - Station Configuration Status

definition: Information concerning the use and status of some vital hardware components of a radar system .

Repetitive

With FX extension bit.

Element
bit size: 7
Raw Content

Note: Due to the diversity in hardware design and requirements of present and future radar stations, it is felt impractical to attempt to define individual bits.

I008/120 - Total Number of Items Constituting One Weather Picture

definition: Total number of vectors, respectively contour points, constituting the total weather image, provided with the EOP message.

Element
bit size: 16
Unsigned integer

I008/SP - Special Purpose Field

definition: Special Purpose Field

Explicit (SpecialPurpose)

User Application Profile

- 1: `I008/010` - Data Source Identifier
- 2: `I008/000` - Message Type
- 3: `I008/020` - Vector Qualifier
- 4: `I008/036` - Sequence of Cartesian Vectors in SPF Notation
- 5: `I008/034` - Sequence of Polar Vectors in SPF Notation
- 6: `I008/040` - Contour Identifier
- 7: `I008/050` - Sequence of Contour Points in SPF Notation
- (FX) - Field extension indicator
- 8: `I008/090` - Time of Day
- 9: `I008/100` - Processing Status
- 10: `I008/110` - Station Configuration Status
- 11: `I008/120` - Total Number of Items Constituting One Weather Picture
- 12: `I008/038` - Sequence of Weather Vectors in SPF Notation
- 13: `I008/SP` - Special Purpose Field
- *RFS indicator*
- (FX) - Field extension indicator