

# Asterix category 002 - Transmission of Monoradar Service Messages

**category:** 002

**edition:** 1.2

**date:** 2024-03-15

## Preamble

Surveillance data exchange.

## Description of standard data items

### I002/000 - 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:** South marker message
- 8:** Activation of blind zone filtering
- 9:** Stop of blind zone filtering

**Notes:** 1. In application where transactions of various types are exchanged, the Message Type Data Item facilitates the proper message handling at the receiver side.  
2. Message Type values 1-127 are reserved for common standard use, whereas the values 128-255 are application dependent.

### I002/010 - Data Source Identifier

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

Group

#### I002/010/SAC - System Area Code

Element

bit size: 8

Raw Content

#### I002/010/SIC - System Identification Code

Element

bit size: 8

Raw Content

**Notes:**

- 1. The defined SACs are listed in Part 1, Table 2 [Ref. 2]
- 2. The defined SICs are listed in Part 1, Annex B [Ref. 2]

### I002/020 - Sector Number

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

Element  
bit size: 8  
Unsigned quantity  
 $LSB = 360/2^8 \text{ }^\circ \approx 1.40625 \text{ }^\circ$   
unit: "°"

The use of the antenna azimuth as sector number has the advantage of being independent of the number of sectors implemented.

### **I002/030 - Time of Day**

definition: Absolute time stamping expressed as UTC time.

Element  
bit size: 24  
Unsigned quantity  
 $LSB = 1/2^7 \text{ s} \approx 7.8125e - 3 \text{ s}$   
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.2].
3. Data Item I002/030 can have various logical meanings. In a particular message, the logical meaning is implicit from its context (e.g. in a North marker message it represents the antenna North crossing time; in a sector message it represents the antenna sector crossing time).

### **I002/041 - 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  
 $LSB = 1/2^7 \text{ s} \approx 7.8125e - 3 \text{ s}$   
unit: "s"

### **I002/050 - Station Configuration Status**

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

Repetitive

With FX extension bit.

Element  
bit size: 7  
Raw Content

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

### **I002/060 - Station Processing Mode**

definition: Details concerning the present status with respect to processing parameters and options.

Repetitive

With FX extension bit.

Element

bit size: 7

Raw Content

**NOTES:**

1. Typical information conveyed within this Data Item includes inter alia type of polarisation in use, Moving Target Indicator (MTI) in use and/or definition of the range to which MTI is applied, presence of overload conditions and the type of load reduction measures in use.
2. Only the structure of this Data Item is defined, no attempt is made to standardise its contents, in order not to hamper any application or future development.

**I002/070 - Plot Count Values**

definition: Plot count values according to various plot categories, either for the last full antenna scan or for the last sector processed.

Repetitive

Regular, 1 byte(s) REP field size.

Group

**I002/070/A - Aerial Identification**

Element

bit size: 1

Values:

**0:** Counter for antenna 1

**1:** Counter for antenna 2

**I002/070/IDENT**

Element

bit size: 5

Values:

**1:** Sole primary plots

**2:** Sole SSR plots

**3:** Combined plots

**I002/070/COUNTER**

Element

bit size: 10

Unsigned integer

**I002/080 - Warning/Error Conditions**

definition: Warning/error conditions affecting the functioning of the radar system itself.

Repetitive

With FX extension bit.

Element

bit size: 7

Raw Content

**NOTE:** Warning/error condition values 1-63 are reserved for common Standard use, whereas the values 64-127 are application dependent.

## **I002/090 - 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

### **I002/090/RE - Range Error**

Element  
bit size: 8  
Signed quantity  
 $LSB = 1/2^7 \text{ NM} \approx 7.8125e - 3 \text{ NM}$   
unit: "NM"

### **I002/090/AE - Azimuth Error**

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

## **NOTES**

1. LSB of RE is calculated as  $2^{16-f}$ .
2. A default quantisation unit of  $0.022^\circ$  and a range between  $-2.8125^\circ$  and  $+2.7905^\circ$  is obtained for a value of  $f=2$ .

## **I002/100 - Dynamic Window Type 1**

definition: Signals the activation of a certain selective filtering function and in a polar coordinates system the respective geographical areas.

Group

### **I002/100/RS - Rho Start**

Element  
bit size: 16  
Unsigned quantity  
 $LSB = 1/2^7 \text{ NM} \approx 7.8125e - 3 \text{ NM}$   
unit: "NM"  
< 512.0

### **I002/100/RE - Rho End**

Element  
bit size: 16  
Unsigned quantity  
 $LSB = 1/2^7 \text{ NM} \approx 7.8125e - 3 \text{ NM}$   
unit: "NM"  
< 512.0

### **I002/100/TS - Theta Start**

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

### **I002/100/TE - Theta End**

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

The logical meaning of the polar window is defined by its context, given by the Message Type (Data Item I002/000) in the record concerned.

### **I002/SP - Special Purpose Field**

definition: Special Purpose Field  
Explicit (SpecialPurpose)

### **User Application Profile**

- 1: I002/010 - Data Source Identifier
- 2: I002/000 - Message Type
- 3: I002/020 - Sector Number
- 4: I002/030 - Time of Day
- 5: I002/041 - Antenna Rotation Speed
- 6: I002/050 - Station Configuration Status
- 7: I002/060 - Station Processing Mode
- (FX) - Field extension indicator
- 8: I002/070 - Plot Count Values
- 9: I002/100 - Dynamic Window Type 1
- 10: I002/090 - Collimation Error
- 11: I002/080 - Warning/Error Conditions
- *Spare*
- 13: I002/SP - Special Purpose Field
- *RFS indicator*
- (FX) - Field extension indicator