



National Marine Electronics Association

International Marine Electronics Association

Technical Bulletin

Amendment to NMEA0183 Version 4.10

AT 0183 20131216

NMEA 0183 Amendment

An amendment is a technical specification that is publically available and will be added to this version at a later date altering this version to a new version.

This amendment is based on the was revised and completed on December 15, 2013.

This document contains the final approved NMEA 0183 / IEC 61162-1 sentences for:

- EPV – Command or report equipment property value
- SPW – Security password sentence
- TRL – AIS transmitter non-functioning log

This Amendment had been reviewed and approved by NMEA, IEC TC80 Working Group 6 and IEC TC80 Working Group 15.

Note: Please note that the tables in this Amendment, AT 0183 20131216, do not have numbers but as listed as XX and XY. Once this Amendment evolves into the next version of the NMEA 0183 Standard, these tables will have the appropriate number based on the NMEA 0183 Standard.

EPV – Command or report equipment property value

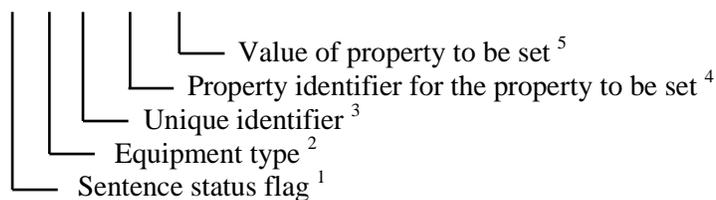
The EPV sentence provides a method to command and report specific equipment settings. This sentence is a command sentence.

This sentence may be queried using the NMEA 0183 sentence Query method resulting in the generation of one or more EPV sentences as necessary to report all configurable equipment properties and their current values.

When this sentence is sent as a command and not accepted, the receiving equipment shall generate a NAK sentence response providing an appropriate “reason code”.

AIS Class A and AIS Repeater equipment shall always respond to an EPV command sentence. When the command is accepted the response shall be an EPV report sentence for the commanded property identifier. When the command is not accepted, the response shall be a NAK sentence providing an appropriate “reason code”.

\$--EPV,a,cc,c--c,x.x,c--c,*hh<CR><LF>



Notes:

- 1) This field is used to indicate a sentence that is a status report of current settings or a configuration command changing settings. This field shall not be null.
 - R = Sentence is a status report of current settings (use for a reply to a query).
 - C = Sentence is a configuration command to change settings. A sentence without “C” is not a command.
- 2) The Equipment type field contains the two character Talker ID of the destination equipment when this sentence is sent as a Command as designated by the “Sentence status flag” (See Note 1) field, and identifies the device type for which the sentence is targeted. When this sentence is a Report (e.g. in response to a query) as designated by the “Sentence status flag” (See Note 1) field, the Equipment type field contains the Talker ID of the equipment generating the sentence.
- 3) The unique identifier identifies the same equipment irrespective of command versus response: For commands it identifies the equipment intended to receive the command. For responses it identifies the equipment that actually received the command. Under normal conditions the response will be received from the equipment for which the command was intended. Equipment should only send one or more response sentences in response to command sentences received and should not use response sentences for general reporting. For AIS Class A the unique identifier is the MMSI. The unique identifier may be null.

- 4) The property identifier is a variable length integer field that identifies a parameter that can be set in accordance with Tables XX, and XY and is intended for commissioning settings. The following property identifiers, though initially defined for specific equipments, may be applicable to other equipments in the future.
- Identifiers 101 through 116 were defined to support AIS Mobile Stations. See IEC 61993-2 for additional information.
 - Identifiers 201 through 221 were defined to support AIS Repeater Shore Stations. See IEC 62320-3 for additional information.
- 5) The “Value of property to be set” is a variable length character string representing the intended configuration parameter value when the sentence is a command and the current value when the sentence is a report (See Note 1).

Table XX – AIS Class A Mobile Station Property identifiers

AIS Class A Mobile Stations		
Property identifier	Property meaning	Value range
0 to 100	Reserved	
101	Sensor 1 baud	4800, 9600, 14400, 19200, 38400
102	Sensor 2 baud	4800, 9600, 14400, 19200, 38400
103	Sensor 3 baud	4800, 9600, 14400, 19200, 38400
104	Long-range baud	4800, 9600, 14400, 19200, 38400
105	DGNSS baud	4800, 9600, 14400, 19200, 38400
106	MMSI	000000000, 200000000 ... 799999999, 982000000 ... 987999999
107	IMO number	0000000 ... 9999999
108	Long-range interface configuration	“A” = automatic “M” = manual
109	Long-range AIS broadcast channel 1	Valid channel according ITU-R M.1084-4. See 8.3. Default value 0 indicates no transmission of message 27
110	Long-range AIS broadcast channel 2	Valid channel according ITU-R M.1084-4. See 8.3. Default value 0 indicates no transmission of message 27
111	Change administrator password	New administrator password
112	Change user password	New user password
113	AIS-SART test mode	0 = normal mode 1 = display and output AIS-SART in test mode

Table XY – AIS Repeater Stations Property identifiers

AIS Shore Stations		
Property identifier	Property meaning	Value range
201	User ID	The ID should be as defined in 4.4.1.

202	Primary Position Source	0 = Internal GNSS 1 = Surveyed position
203	Longitude	Resolution: 1/10000 min Degrees, minutes and fractional minutes, E/W Format dddmm.mmmmh 181 degrees = not available = default
204	Latitude	Resolution: 1/10000 min Degrees, minutes and fractional minutes, N/S Format ddmm.mmmmh 91 degrees = not available = default
205	Own Identification Report UTC	00 – 59 MM of frame
206	Own Identification Report Start Slot	0 – 2 249
207	Own Identification Report Slot Interval	0 – 135 000 0 = no transmission (Default)
208	Own Identification Report Access scheme	0 = depending on reporting interval 1 = FATDMA 2 = ITDMA/RATDMA (RATDMA when interval >7min) 3 = SOTDMA (only if interval <= 1 min)
209	Transmit Power	0 = High power 1 = Low power 2 ...9 as defined by the manufacturer (optional)
210	Channel A	0 – 2088 Channel number according to ITU-R M.1084-4. The channel number “0” disables the transmission.
211	Channel B	0 – 2088 Channel number according to ITU-R M.1084-4. The channel number “0” disables the transmission.
212	128 bit AES Encryption Key	Hex format (default all zeros) 0 – xxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxx
213	Repeater enabled	0 = Repeater disabled, no repetition of message (default) 1 = Repeater enabled
214	RATDMA enable	0 = RATDMA disable (default) 1 = RATDMA enable
215	Max number of repetition slots	Default: 50 Maximum: 400 for Type 1, 50 for Type 2
216	Down sampling factor	0 = Fixed interval 1 = default = each message is repeated, no down sampling 2 = every second message is repeated 3 = every 3rd message is repeated 15 = every 15th message is repeated

217	Maximum repeat interval (moving vessel)	0 – 33750
218	Maximum repeat interval (stationary vessel).	0 – 33750
219	Fixed repeat interval (moving vessel)	Fixed interval, number of slots 0 = default = no fixed interval
220	Fixed repeat interval (stationary vessel)	Fixed interval, number of slots 0 = default = no fixed interval
221	Repetition of AIS-SART test messages	0 = disabled (default) 1 = enabled

Examples of EPV Sentence command and response:

Example 1: The example below shows an ECDIS (with a Talker ID of “EI”) setting the baud rate for the Port1 of an AIS transponder (with a Talker ID of “AI”). In this example, the MMSI of the AIS is 503123450. The ECDIS would send the following command:

\$EI_{EPV},C,AI,503123450,101,38400*hh

The AIS would send the following response:

\$AI_{EPV},R,AI,503123450,101,38400*hh

Example 2: The example below shows an ECDIS (with a Talker ID of “EI”) setting the baud rate for the Port1 of an AIS transponder (with a Talker ID of “AI”). In this example, the MMSI of the AIS is 503123450, but the wrong MMSI was used with two digits transposed from “45” to “54”. The ECDIS would send the following command:

\$EI_{EPV},C,AI,503123540,101,38400*hh

The AIS would send the following response indicating that it “Cannot fulfill request or command because of a problem with a data field in the sentence” due to the incorrect MMSI.

\$AINAK,EI,EPV,,11,*hh

Example 3: The example shows a protected EPV Sentence command and response using a SPW sentence for authentication:

Another practical example is a Radar (Talker ID of “RA”) setting the MMSI and IMO number of an AIS transponder (Talker ID “AI”) and using a password. It is assumed that the MMSI is not yet set and therefore the value is 0. The Radar would send the following sentences:

This sets the MMSI number.

```
$RASPW,EPV,000000000,1,SESAME*hh  
$RAEPV,C,AI,000000000,106,503123450*hh
```

This sets the IMO number

```
$RASPW,EPV,503123450,1,SESAME*hh  
$RAEPV,C,AI,503123450,107,9241061*hh
```

The AIS would send the following response sentences:

```
$AIEPV,R,AI,503123450,106,503123450*hh  
$AIEPV,R,AI,503123450,107,9241061*hh
```

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SPW – Security password sentence

This sentence can be used for authentication. For this purpose the sentence has to be applied before the protected sentence (for example EPV, SSD are sentences that may be considered protected).

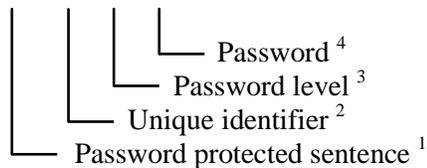
Other sentences shall not be interleaved between the password sentence and protected sentence and the time between the SPW and the protected sentence should be limited. The password protected sentence pair should be sent without unnecessary delay between sentences.

The recommendation is 1s maximum timeout. Note that any of the signals may be lost and timed out.

TAG Block grouping may be used to link the SPW sentence and a single protected sentence together. SPW sentences shall not be grouped with more than one protected sentence.

If the SPW is not accepted (for example because the password is incorrect) the receiving device shall generate a NAK sentence with the reason code set to 11 and the associated or TAG Block grouped protected sentence(s) shall not be processed.

`$--SPW,ccc,c--c,x,c--c*hh<CR><LF>`



Notes:

- 1) The following sentence formatter that should be protected (for example EPV)
- 2) For AIS the unique identifier is the MMSI.
- 3) An integer number as defined below:
 - 1 = User level password;
 - 2 = Administrator level password;
 - 3-9 = Reserved
- 4) Password as text up to 32 characters.

Example:

The password could be changed with a SPW+EPV sentence pair. In this example the Talker ID of “II” is used for Integrated Instrumentation and the AIS Talker ID of “AI” is used. The MMSI of the AIS Station is 211000001, and the administrator password is initially set to “SESAME” and will be changed to “HEUREKA143”.

```
$IISPW,EPV,211000001,2,SESAME*hh
$IIEPV,C,AI,211000001,111,HEUREKA143*hh
```

With response

```
$AIEPV,R,AI,211000001,111,HEUREKA143*hh
```

TRL – AIS transmitter non-functioning log

This sentence is specific to AIS Class A stations. It is intended to support the retrieval of the AIS non-functioning log information.

AIS Class A stations log the last 10 times of more than 15 min when the unit was not transmitting position reports. This includes times when the unit was switched off and times when the transmitter was inactivated by any means.

This sentence is used to output the logged non-functioning times. On a query for this sentence up to 10 sentences will be output, one sentence for each logged non-functioning time.

This sentence is always generated by Class A stations as a response to a query even when no log entries exist, (see Note 1)

\$.--TRL,x.x,x.x,x.x,xxxxxxxx,hhmmss.ss,xxxxxxxx,hhmmss.ss,x,*hh<CR><LF>

Reason code ⁸
Switch on UTC time ⁷
Switch on date (ddmmyyyy) ⁶
Switch off UTC time ⁵
Switch off date (ddmmyyyy) ⁴
Sequential message identifier ³
Log entry number ²
Total number of log entries ¹

Notes:

- 1) Total number of log entries (1...10). When a query is received for this sentence and no log entries exist, this field shall be set to “0” and all other fields shall be set to NULL. When a query is received for this sentence and one or more log entries exist, this field should report the total number of log entries.
- 2) The Log entry number identifies a specific log entry and the order of a single TRL sentence as part of a multi-sentence message with a range of 1 to the Total number of log entries).
- 3) The sequential message identifier provides a message identification number from 0 to 9 that is sequentially assigned and is incremented for each new multi-sentence message. The count resets to 0 after 9 is used. For a message requiring multiple sentences, each sentence of the message contains the same sequential message identification number. It is used to identify the sentences containing portions of the same message. This allows for the possibility that other sentences might be interleaved with the message sentences that, taken collectively, contain a single message.
- 4) Switch off date, in the format “ddmmyyyy“
- 5) Switch off UTC time. Required resolution is in minutes. The seconds may be set to 0 and the fractional part may be omitted.

- 6) Switch on date, in the format “ddmmyyy”
- 7) Switch on UTC time. Required resolution is in minutes. The seconds may be set to 0 and the fractional part may be omitted.
- 8) Reason for Tx non-functioning:
 - 1 = power off;
 - 2 = silent mode;
 - 3 = transmission switched off by channel management command;
 - 4 = equipment malfunction;
 - 5 = invalid configuration;
 - 6 to 9 = reserved for future use.

END

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