

NMEA 0183 V4.00

The Standard's Evolution Continues



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New Sentences

- **Supporting the VDR**
 - ▲ Providing Detailed Alarm information
- **Supporting RADAR**
- **Supporting AIS Shore Stations**
- **Supporting AIS AtoN Stations**
- **Supporting Shipboard and AIS Shore Stations**
- **Supporting Protocol Extensions**

New Items

- A host of new Talker IDs for AIS
- A new Talker ID
 - ✦ Containing a numeric value
 - ✦ Configurable per application
- New Status Flag for Sentences
 - ✦ Command vs Status

New Protocol Extension

- **Transport Sentences**
- **Annotate Sentences**
- **Group Sentences**
- **Enables Safe and Accurate Transport**
- **Use Shipboard and on Shore**
- **TAG Block**

What's in the Works

- **New Sentences supporting Galileo**
- **Expanded GNSS Sentences supporting Galileo**
- **E-Navigation**

New Sentences

Voyage Data Recorder

- **AKD - Acknowledge Detail Alarm Condition**
- **ALA - Set Detail Alarm Condition**
- **DOR - Door Status Detection**
- **ETL-Engine Telegraph Operation Status**
- **EVE – General Event Message**
- **FIR – Fire Detection**

New Sentences

Voyage Data Recorder

- **GEN – Generic Status Information**
- **HSS-Hull Stress Surveillance Systems**
- **PRC-Propulsion Remote Control Status**
- **TRC-Thruster Control Data**
- **TRD-Thruster Response Data**
- **WAT- Water Level Detection**

New Sentence Supporting RADAR

- **TTD – Tracked Target Data**
- **Six-bit Encapsulation**
- **Up to Four Targets / 256 sentences**

New Sentences

AIS Shore Stations

- **ACM: Preparation and initiation of an AIS Base Station addressed channel management message (ITU-R M.1371 Message 22)**
- **AGA: Preparation and initiation of an AIS Base Station broadcast of a group assignment message (Message 23)**
- **ASN: Preparation and initiation of an AIS Base Station broadcast of assignment VDL Message 16**
- **BCG: Base Station configuration, General command**
- **BCL: Base Station configuration, Location command**
- **DLM: Data link management slot allocations for Base Station**

New Sentences

AIS Shore Stations

- **ECB: Configure broadcast rates for Base Station messages with epoch planning support**
- **SPO: Select AIS device's processing and output**
- **TFR: Transmit feed-back report**
- **TSA: Transmit slot assignment**
- **TSP: Transmit slot prohibit**
- **TSR: Transmit slot prohibit status report**
- **VSI: VDL signal information**

New Sentences

AIS AtoN Stations

- **ACF: General AtoN Station Configuration Command**
- **ACG: Extended General AtoN Station Configuration Command**
- **AFB: AtoN Forced Broadcast Command**

New Sentences

AIS AtoN Stations

- **AID: AtoN Identification Configuration Command**
- **CBR: Configure Broadcast Rates for AIS AtoN Station Message Command**
- **MEB: Message input for Broadcast, Command**
- **TPC: Transmit slot Prohibit Command**

New Sentences

Shipboard & AIS Shore

- **ADS: Automatic device status**
- **CEK: Configure Encryption Key Command**
- **COP: Configure the Operational Period, Command**
- **DCR: Device Capability Report**
- **DDC – Display Dimming Control**

New Sentences

Shipboard & AIS Shore

- **FSR: Frame summary of AIS reception**
- **NAK: Negative Acknowledgement**
- **RST: Equipment ReSeT command**
- **SID: Set an equipment's IDentification command**
- **VER: Version**

TAG Block Configuration

- **CPC: Configure Parameter-code for UNIX time parameter (c)**
- **CPD: Configure Parameter-code for destination-identification parameter (d)**
- **CPG: Configure Parameter-code for the sentence-grouping parameter (g)**
- **CPN: Configure Parameter-code for the line-count parameter (n)**

TAG Block Configuration

- **CPR: Configure Parameter-code for relative time parameter (r)**
- **CPS: Configure Parameter-code for the source identification parameter (s)**
- **CPT: Configure Parameter-code for general alphanumeric string parameter (t)**
- **TBR: TAG Block Report**
- **TBS: TAG Block listener Source-identification configuration command**

TAG Block

- **Contents**

- ▲ **Background**
- ▲ **Interoperability**
- ▲ **Structure**
- ▲ **Coding Rules**
- ▲ **Parameter Code Dictionary**
- ▲ **Interpretation**
- ▲ **Filtering**
- ▲ **Rules for transmission**
- ▲ **Rules for reception processing**
- ▲ **Configuration**

TAG Block

- **Designed for Networks**
- **Useful on any interface**
- **Clarifies sentence relationships**
- **Provides sentence Linkage**
- **Does not transport equipment data**
- **Provides sentence related information**

TAG Block

- Reliably link ...
- Accurately Identify Source ...
- Accept Recognized Sources ...
- Identify Timing relationships ...

TAG Block

- **Accurately Identify Destination ...**
- **Ignore Sentences ...**
- **Allow annotation during transport ...**
- **Detect Loss ...**

TAG Block

- **Interoperable with Legacy 0183 Equip**
- **Considers Existing Rules**
- **Implemented Proper Decoding**
- **Device has Sufficient Buffer Space**
- **Device Handles Valid / Invalid Chars**

TAG Block

Basic Structure

\s:r003669961,c:1153612428*77

Begin TAG Block Delimiter - Back Slash Character “\”

Parameter Code Code Delimiter Parameter Value

Field Delimiter Standard 0183 Checksum

End TAG Block Delimiter - Back Slash Character “\”

TAG Block

2 Line Example

\g:1-2-1234,s:r3669961,c:1120959341*hh\!ABVDM,1,1,1,B,,,,,0*hh

\g:2-2-1234*hh\ \$ABVSI,r3669961,1,013536.96326433,1386,-98,,*hh

TAG Block

3 Line Example

\g:1-3-1234,s:r3669961,c:1120959341*hh\
|

\g:2-3-1234*hh\!ABVDM,1,1,1,B,,,,,0*hh
|

\g:3-3-1234*hh\ \$ABVSI,r3669961,1,013536.96326433,1386,-98,,*hh
|

TAG Block

Parameter Code Dictionary

c	UNIX time	c:positive integer
d	Destination-identification	d:alphanumeric string (15 char. maximum)
g	Sentence-grouping	g:numeric string
n	Line-count	n:positive integer
r	Relative time	r:positive integer
s	Source-identification	s:alphanumeric string (15 char. maximum)
t	Text-string	t:valid character string

Room for growth

TAG Block

Parameter Code c

- **Unix (POSIX) Time**
- **Positive Integer**
- **Resolution down to milliseconds**
- **CPC Sentence**

TAG Block

Parameter Code d

- Destination
- Alphanumeric String
- Unique Identifier (AIS Applications)
- Multiple destinations possible
- CPD Sentence

TAG Block

Parameter Code g

- Sentence Grouping
- Numeric String
- Always First
- Two or More Lines
- CPG Sentence

TAG Block

Parameter Code n

- Line Count
- Positive Integer
- Incremented
- CPN Sentence

TAG Block

Parameter Code r

- **Relative Time**
- **Positive Integer**
- **Seconds or Manufacturer Defined**
- **CPR Sentence**

TAG Block

Parameter Codes

- Source Identification
- Alphanumeric String
- 15 Char
- CPS Sentence

TAG Block

Parameter Code t

- Text String
- Valid Character String
- CPT Sentence

TAG Block

Query Sentences with TAG Block

- Query using a TAG Block:

\s:ControlPC1,d:A003669955,c:1149654649*58\UPABQ,VER*3A

- Response to Query using a TAG Block:

\s:A003669955,d:ControlPC1*2C\ABVER,1,1,,AB,XYZ,A003669955,XYZ0001,Beta,1,1*00

TAG Block

Configuration Reporting

- TBR – TAG Block Report Request
- Two sides – Listener & Talker
- All Parameter Codes Active.
- All Parameter Codes Supported
- All Parameter Codes Inactive but Supported

TAG Block

Source Configuration

- **TBS – TAG Block Listener Source-identification Configuration Command**
- **One side – Listener**
- **Add**
- **Remove / Remove All**
- **Report configured Sources**

SUMMARY

- **NMEA 0183 V4.00 is Still Evolving**
- **Meeting new challenges**
- **Supporting new equipment**
- **Both On Ship or On Shore**

SUMMARY

- **Supports Advanced communications through use of TAG Block**
- **TAG Block is Powerful and Extensible**
- **Used Today in the USCG's Nationwide AIS Increment 1 Network**

NMEA 0183 V4.00

Evolving to meet industry's needs