

INTERNATIONAL STANDARD

AMENDMENT 2

**Maritime navigation and radiocommunication equipment and systems –
Digital interfaces –
Part 3: Serial data instrument network**

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FOREWORD

This amendment has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

The text of this amendment is based on the following documents:

CDV	Report on voting
80/714/CDV	80/734/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION to Amendment 2

The amendment updates the normative references for NMEA 2000 Main Document, NMEA 2000 Appendix A and NMEA 2000 Appendix D to a later version.

The amendment further updates the normative reference for NMEA 2000 Appendix B to a later version which includes the following new parameter groups:

- 126983 – Alert
- 126984 – Alert response
- 129041 – AIS Aids to Navigation (AtoN) report
- 130316 – Temperature- extended range

and the following revised parameter groups:

- 126992 – System time
- 128259 – Speed, water referenced
- 128267 – Water depth
- 129285 – Navigation – Route/WP information
- 129033 – Time and date
- 129038 – AIS Class A position report

- 129039 – AIS Class B position report
- 129040 – AIS Class B extended position report
- 129550 – GNSS differential correction receiver
- 129793 – AIS UTC and date report
- 129794 – AIS Class A static and voyage related data
- 129796 – AIS acknowledge
- 129798 – AIS SAR aircraft position report
- 129800 – AIS UTC/date inquiry
- 129801 – AIS addressed safety related message
- 129802 – AIS safety related broadcast message
- 129803 – AIS interrogation
- 129804 – AIS assignment mode command
- 129805 – AIS data link management message
- 129806 – AIS channel management
- 129807 – AIS group assignment
- 129809 – AIS Class B “CS” static data report, Part A
- 129810 – AIS Class B “CS” static data report, Part B

The amendment further adds a new informative Annex B which shows the relationships between IEC 61162-1 sentences and IEC 61162-3 parameter group numbers.

1 Scope

Add, at the end of the scope, the following new paragraph:

Relationships between IEC 61162-1 sentences and IEC 61162-3 parameter group numbers are given in Annex B.

2 Normative references

Replace the existing reference, NMEA 2000 Main document, Version 1.200: October 2004, by the following:

NMEA 2000 Main document, Version 1.210: January 2013, *Serial-Data Networking Of Marine Electronic Devices*¹

Replace the existing reference, NMEA 2000, Appendix A, Version 1.200: October 2004, by the following:

NMEA 2000, Appendix A, Version 2.000: January 2013, *Serial-Data Networking Of Marine Electronic Devices – Application Layer (Parameter Group Definitions)*

¹ Available from National Marine Electronics Association (USA), www.nmea.org.

Replace the existing reference, as updated by Amendment 1:2010, NMEA 2000, Appendix B, Version 1.300: May 2009, by the following:

NMEA 2000, Appendix B, Version 2.000: January 2013, *Serial-Data Networking Of Marine Electronic Devices – Data Base*

Replace the existing reference, NMEA 2000, Appendix D, Version 1.200: October 2004, by the following:

NMEA 2000, Appendix D, Version 1.210: January 2013, *Serial-Data Networking Of Marine Electronic Devices – Application Notes*

Add, after Annex A, the following new Annex B:

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Annex B (informative)

Relationship between IEC 61162-1 sentences and IEC 61162-3 parameter group numbers

Table B.1 and Table B.2 give equivalents for transferring data over IEC 61162-1 interfaces and IEC 61162-3 interfaces.

Table B.1 – Conversion from IEC 61162-1 to IEC 61162-3

IEC 61162-1 sentence		IEC 61162-3 PGN	
AAM	Waypoint arrival alarm	129284	Navigation data
ABK	AIS addressed and binary broadcast acknowledgement	129796	AIS acknowledge
ABM	AIS addressed binary and safety related message	129801	AIS addressed safety related message
		129795	AIS addressed binary message
ACA	AIS regional channel assignment message	129806	AIS channel management
ACK	Acknowledge alarm	126984	Alert response
ACS	AIS channel management information source	129806	AIS channel management
AIR	AIS interrogation request	129083	AIS interrogation
AKD	Acknowledge detail alarm condition	126984	Alert response
ALA	Set detail alarm condition	126983	Alert
ALR	Set alarm state	126983	Alert
APB	Heading/Track Controller (Autopilot) Sentence B	127237	Heading/track control
		129283	Cross track error
		129284	Navigation data
BBM	AIS broadcast binary message	129797	AIS binary broadcast message
		129802	AIS safety related broadcast message
BEC	Bearing and distance to waypoint – Dead reckoning	129284	Navigation data
BOD	Bearing – Origin to destination	129284	Navigation data
BWC	Bearing and distance to waypoint – Great circle	129284	Navigation data
BWR	Bearing and distance to waypoint – Rhumb line	129284	Navigation data
BWW	Bearing – Waypoint to Waypoint	129302	Bearing and distance between two marks
		129284	Navigation data
CUR	Water current layer	130577	Direction data
DBT	Depth below transducer	128267	Water depth
DPT	Depth	128267	Water depth
DSC	Digital selective calling information	129808	DSC call information
DSE	Expanded digital selective calling	129808	DSC call information
DTM	Datum reference	129044	Datum
		129045	User datum setting

IEC 61162-1 sentence		IEC 61162-3 PGN	
FSI	Frequency set status or command	129799	Radio frequency/mode/power
GBS	GNSS satellite fault detection	129545	GNSS RAIM output
GFA	GNSS fix accuracy and Integrity	129540	GNSS satellites in view
GGA	Global positioning system (GPS) fix data	129025 129029	Position, rapid update GNSS position data
GLL	Geographic position – Latitude/longitude	129025 129029	Position, rapid update GNSS position data
GNS	GNSS fix data	129025 129029	Position, rapid update GNSS position data
GSA	GNSS DOP and active satellites	129029 129539	GNSS position data GNSS DOPs
GST	GNSS pseudorange error statistics	129547	GNSS pseudorange error statistics
GSV	GNSS satellites in view	129540	GNSS satellites in view
HDG	Heading, deviation and variation	127250 127258	Vessel heading Magnetic variation
HDT	Heading true	127250	Vessel heading
HSC	Heading steering command	127237	Heading track control
HTC	Heading/track control command	127237	Heading track control
HTD	Heading/track control data	127237	Heading track control
MSK	MSK receiver interface command	129550	GNSS differential correction receiver interface
MSS	MSK receiver signal	129551	GNSS differential correction receiver signal
MTW	Water temperature	130316	Temperature extended range
MWD	Wind direction and speed	130306	Wind data
MWV	Wind speed and angle	130306	Wind data
OSD	Own ship data	127250 128259 129026 129291 130577	Vessel heading Speed, water referenced COG, SOG rapid update Set and drift, rapid update Direction data
RMB	Recommended minimum navigation information	129283 129284	Cross track error Navigation data
RMC	Recommended minimum specific GNSS data	129025 129026 129029	Position, rapid update COG and SOG, rapid update GNSS position data
ROR	Rudder order status	127245	Rudder
ROT	Rate of turn	127251	Rate of turn
RSA	Rudder sensor angle	127245	Rudder
RTE	Routes	129285	Navigation – Route/WP information
SSD	AIS ship static data	129794	AIS Class A static and voyage related data

IEC 61162-1 sentence		IEC 61162-3 PGN	
THS	True heading and status	127250	Vessel heading
		130577	Direction data
TLB	Target label	128520	Tracked target data
TLL	Target latitude and longitude	128520	Tracked target data
TTM	Tracked target message	128520	Tracked target data
VBW	Dual ground/water speed	128259	Speed, water referenced
		130577	Direction data
		130578	Vessel speed components
VDM	AIS VHF data-link message	129038	AIS Class A position report
		129039	AIS Class B position report
		129040	AIS Class B extended position report
		129041	AIS Aids to Navigation (AtoN) report
		129792	AIS DGNSS broadcast binary message
		129793	AIS UTC and date report
		129794	AIS Class A static and voyage related data
		129795	AIS addressed binary message
		129796	AIS acknowledge
		129797	AIS binary broadcast message
		129798	AIS SAR aircraft position report
		129800	AIS UTC/date Inquiry
		129801	AIS addressed safety related message
		129802	AIS safety related broadcast message
		129803	AIS interrogation
		129804	AIS assignment mode command
		129805	AIS data link management message
		129806	AIS channel management
		129807	AIS group assignment
		129809	AIS Class B "CS" static data report, Part A
		129810	AIS Class B "CS" static data report, Part B
VDR	Set and drift	129291	Set and drift, rapid update
		130577	Direction data

IEC 61162-1 sentence		IEC 61162-3 PGN	
VDO	AIS VHF data-link own vessel report	129308	AIS Class A position report
		129039	AIS Class B position report
		129040	AIS Class B extended position report
		129041	AIS Aids to Navigation (AtoN) report
		129792	AIS DGNSS broadcast binary message
		129793	AIS UTC and date report
		129794	AIS Class A static and voyage related data
		129795	AIS addressed binary message
		129796	AIS acknowledge
		129797	AIS binary broadcast message
		129798	AIS SAR aircraft position report
		129800	AIS UTC/date Inquiry
		129801	AIS addressed safety related message
		129802	AIS safety related broadcast message
		129803	AIS interrogation
		129804	AIS assignment mode command
		129805	AIS data link management message
		129806	AIS channel management
		129807	AIS group assignment
		129809	AIS Class B "CS" static data report, Part A
		129810	AIS Class B "CS" static data report, Part B
VHW	Water speed and heading	127250	Vessel heading
		128259	Speed, water referenced
		130577	Direction data
VLW	Dual ground/water distance	128275	Distance log
VPW	Speed – Measured parallel to wind	130306	Wind data
VSD	AIS voyage static data	129794	AIS Class A static and voyage related data
VTG	Course over ground and ground speed	129026	COG and SOG, rapid update
		130577	Direction data
WAT	Water level detection	130320	Tide station data
WCV	Waypoint closure velocity	129284	Navigation data
WNC	Distance – Waypoint to waypoint	129302	Bearing and distance between two marks
WPL	Waypoint location	129284	Navigation data
		130074	Route and WP service
XTE	Cross track error, measured	129283	Cross track error
XTR	Cross track error – Dead reckoning	129283	Cross track error

IEC 61162-1 sentence		IEC 61162-3 PGN	
ZDA	Time and date	126992	System time
		129033	Time and date
ZDL	Time and distance to variable point	129301	Time to/from mark
ZFO	UTC and time from origin waypoint	129301	Time to/from mark
ZTG	UTC and time to destination waypoint	129284	Navigation data
		129301	Time to/from mark

Table B.2 – Conversion from IEC 61162-3 to IEC 61162-1

IEC 61162-3 PGN		IEC 61162-1 sentence	
126983	Alert	ALA	Set detail alarm condition
		ALR	Set alarm state
126984	Alert response	ACK	Acknowledge alarm
		AKD	Acknowledge detail alarm condition
126992	System time	ZDA	Time and date
127237	Heading track control	APB	Heading/track controller (autopilot) sentence B
		HSC	Heading steering command
		HTC	Heading/track control command
		HTD	Heading/track control data
127245	Rudder	ROR	Rudder order status
		RSA	Rudder sensor angle
127250	Vessel heading	HDG	Heading, deviation and variation
		HDT	Heading true
		OSD	Own ship data
		THS	True heading and status
		VHW	Water speed and heading
127251	Rate of turn	ROT	Rate of turn
127258	Magnetic variation	HDG	Heading, deviation and variation
127809	AIS Class B "CS" static data report, Part A	VDM	AIS VHF data-link message
127810	AIS Class B "CS" static data report, Part B	VDM	AIS VHF data-link message
128259	Speed, water referenced	OSD	Own ship data
		VBW	Dual ground/water speed
		VHW	Water speed and heading
128267	Water depth	DBT	Depth below transducer
		DPT	Depth
128275	Distance log	VLW	Dual ground/water distance
128520	Tracked target data	TLB	Target label
		TLL	Target latitude and longitude
		TTM	Tracked target message

IEC 61162-3 PGN		IEC 61162-1 sentence	
129025	Position, rapid update	GGA GLL GNS RMC	Global positioning system (GPS) fix data Geographic position – Latitude/longitude GNSS fix data Recommended minimum specific GNSS data
129026	COG and SOG, rapid update	OSD RMC VTG	Own ship data Recommended minimum specific GNSS data Course over ground and ground speed
129029	GNSS position data	GGA GLL GNS GSA RMC	Global positioning system (GPS) fix data Geographic position – Latitude/longitude GNSS fix data GNSS DOP and active satellites Recommended minimum specific GNSS data
129033	Time and Date	ZDA	Time and date
129038	AIS Class A position report	VDM	AIS VHF data-link message
129039	AIS Class B position report	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129040	AIS Class B extended position report	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129041	AIS AtoN	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129044	Datum	DTM	Datum reference
129045	User datum setting	DTM	Datum reference
129083	AIS interrogation	AIR	AIS interrogation request
129283	Cross track error	APB RMB XTE XTR	Heading/track controller (Autopilot) Sentence B Recommended minimum navigation information Cross track error, measured Cross track error – Dead reckoning
129284	Navigation data	AAM APB BEC BOD BWC BWR BWW RMB WCV WPL ZTG	Waypoint arrival alarm Recommended minimum navigation Information Bearing and distance to waypoint – Dead reckoning Bearing – Origin to destination Bearing and distance to waypoint – Great circle Bearing and distance to waypoint – Rhumb line Bearing – Waypoint to waypoint Recommended minimum navigation information Waypoint closure velocity Waypoint location UTC and time to destination waypoint
129285	Navigation – Route/WP information	RTE	Routes
129291	Set and drift, rapid update	OSD VDR	Own ship data Set and drift
129301	Time to/from mark	ZDL ZFO ZTG	Time and distance to variable point UTC and time from origin waypoint UTC and time to destination waypoint

IEC 61162-3 PGN		IEC 61162-1 sentence	
129302	Bearing and distance between two marks	BWW WNC	Bearing – Waypoint to waypoint Distance – Waypoint to waypoint
129308	AIS Class A position report	VDO	AIS VHF data-link own vessel report
129539	GNSS DOPs	GSA	GNSS DOP and active satellite
129540	GNSS satellites in view	GFA GSV	GNSS fix accuracy and integrity GNSS satellites in view
129545	GNSS RAIM output	GBS	GNSS satellite fault detection
129547	GNSS pseudorange error statistics	GST	GNSS pseudorange error statistics
129550	GNSS differential correction receiver interface	MSK	MSK receiver interface command
129551	GNSS differential correction receiver signal	MSS	MSK receiver signal
129708	AIS SAR aircraft position report	VDM	AIS VHF data-link message
129724	AIS Class A static and voyage related data	SSD	AIS ship static data
129792	AIS DGNSS broadcast binary message	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129793	AIS UTC and date report	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129794	AIS Class A static and voyage related data	VDM VDO VSD	AIS VHF data-link message AIS VHF data-link own vessel report AIS voyage static data
129795	AIS addressed binary message	ABM VDM VDO	AIS addressed binary and safety related message AIS VHF data-link message AIS VHF data-link own vessel report
129796	AIS acknowledge	ABK VDM VDO	AIS addressed and binary broadcast acknowledgement AIS VHF data-link message AIS VHF data-link own vessel report
129797	AIS binary broadcast message	BBM VDM VDO	AIS broadcast binary message AIS VHF data-link message AIS VHF data-link own vessel report
129798	AIS SAR aircraft position report	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129799	Radio frequency/mode/power	FSI	Frequency set status or command
129800	AIS UTC date/enquiry	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report
129801	AIS addressed safety related message	ABM VDM VDO	AIS addressed binary and safety related message AIS VHF data-link message AIS VHF data-link own vessel report
129802	AIS safety related broadcast message	BBM VDM VDO	AIS broadcast binary message AIS VHF data-link message AIS VHF data-link own vessel report
129803	AIS interrogation	VDM VDO	AIS VHF data-link message AIS VHF data-link own vessel report

IEC 61162-3 PGN		IEC 61162-1 sentence	
129804	AIS Assignment mode command	VDM	AIS VHF data-link message
		VDO	AIS VHF data-link own vessel report
129805	AIS data link management message	VDM	AIS VHF data-link message
		VDO	AIS VHF data-link own vessel report
129806	AIS channel management	ACA	AIS regional channel assignment message
		ACS	AIS channel management information source
		VDM	AIS VHF data-link message
		VDO	AIS VHF data-link own vessel report
129807	AIS group assignment	VDM	AIS VHF data-link message
		VDO	AIS VHF data-link own vessel report
129808	DSC call information	DSC	Digital selective calling information
		DSE	Expanded digital selective calling
129809	AIS Class "B" static data report, Part A	VDM	AIS VHF data-link message
		VDO	AIS VHF data-link own vessel report
129810	AIS Class "B" static data report, Part B	VDM	AIS VHF data-link message
		VDO	AIS VHF data-link own vessel report
130074	Route and WP service	WPL	Waypoint location
130306	Wind data	MWD	Wind direction and speed
		MWV	Wind speed and angle
		VPW	Speed – Measured parallel to wind
130316	Temperature extended range	MTW	Water temperature
130320	Tide station data	WAT	Water level detection
130577	Direction data	CUR	Water current layer
		OSD	Own ship data
		THS	True heading and status
		VBW	Dual ground/water speed
		VDR	Set and drift
		VHW	Water speed and heading
		VTG	Course over ground and ground speed
130578	Vessel speed components	VBW	Dual ground/water speed