Panbo's AIS over NMEA 2000 Info Sheet

Due to slow standards writing and slow software updating, some AIS Class B transponders do NOT output all standard AIS messages over NMEA 2000, and some N2K displays do NOT decode all standard AIS messages! This is a list of what works and what doesn't.

Draft #2, 7/22/2012 | Information below is accurate to the best of our knowledge at time of publication, but is not guaranteed.

Corrections and additions are most welcome, and will be applied quickly. Go here for latest info:

http://www.panbo.com/archives/2012/06/ais_over_nmea_2000_shame_sheet

Important AIS Messages	Class A Position	B Position	A Static	B Static	
AIS message number	1, 2 & 3	18	5	24 a & b	AIS messages are defined and numbered by the AIS standard. See references.
NMEA 2000 PGN number	129038	12039	129794	129809 & 129810	NMEA 2000 defines a set of messages (PGNs) which correspond to the AIS messages
Class B Transponders with NMEA 2000 output					
Simrad AI50	Y	Y	Y	NO	Developed before current static PGNs written. Uses proprietary Navico PGN instead.
Navico NAIS-300 (discontinued)	Y	Y	Y	NO	Developed before current static PGNs written. Uses proprietary Navico PGN instead.
Navico NAIS-400	Y	Y	Y	Y	Introduced July, 2012; no PGN list found, but presumed correct
Raymarine AIS 500 (discontinued)	Y	Y	Y	NO	Developed before current static PGNs written. Uses proprietary Raymarine PGN instead.
Raymarine AIS 650	Y	Y	Y	Y	PGN list looks correct, but does it work with current Raymarine MFDs via n2k?
Garmin AIS 600	Y	Y	Y	Y	Tested and PGN list looks correct
Em-Trak B100	Y	Y	Y	Y	Tested and PGN list looks correct (SRT)
Comar AIS-2-2000	Y	Y	Y	Y	PGN list looks correct
Digital Yacht AIS200N2	Y	Y	Y	Y	PGN list looks correct
Digital Yacht AIT2000	Y	Y	Y	Y	No PGN list found, but presumed correct (SRT)
SI-TEX Metadata MDA-1	Y	Y	Y	Y	No PGN list found, but presumed correct (SRT)
GME AIST120	Y	Y	Y	Y	No PGN list found, but presumed correct (SRT)
Vesper AIS XB-8000	Y	Y	Y	Y	No PGN list found, but presumed correct as it's made by Vesper
Vesper Watchmate Vision	Y	Y	Y	Y	No PGN list found, but presumed correct as it's made by Vesper
True Heading CTRX GRAPHENE	Y	Y	Y	Y	No PGN list found, claims to meet the latest specifications (SRT)
MFDs able to plot NMEA 2000 AIS data					
Simrad & Lowrance MFDs	Y	Y	Y	NO	Can use proprietary PGN to display Class B Static data IF networked to Navico transponder. Planned update will decode standard Static data PGNs
Raymarine C/E-Series Wide	Y	Y	Y	NO	Like Navico, can use a proprietary PGN to get Class B Static data from Raymarine AIS 500. There are no known plans to correct software for standard PGNs.
Raymarine a-, c-, and e-Series	Y	Y	Y	NO	Support for standard Static data PGNs accidentally left out of software, but is expected to be fixed with update soon.
Raymarine i70 instrument	Y	Y	Y	Y	Seems to decode PGNs 129809 and 129810 fine
All Garmin MFDs with N2K	Y	Y	Y	Y	Garmin got the PGNs right the first time & also pioneered direct VHF calls to AIS targets
Furuno NavNet TZ	Y	Y	Y	Y	PGN list looks correct (but first edition software seems to have timing trouble with all AIS PGNs)
Charting software able to plot NMEA 2000 AIS data					Using Actisense NGT-1 gateway
Coastal Explorer 2011	Y	Y	Y	Y	Tested fine

A brief history of AIS data standards

The AIS standards were originally written to use NMEA 0183 as the data protocol and from the beginning there were Class B dynamic and static data messages meant to eventually provide smaller vessels the ability to transmit identification and location information similar to Class A.

However, the original Class B static data message #19 was changed to messages #24a & 24b before Class B was implemented (due to a patent issue). Unfortunately this meant that Class A transponders installed prior to the change did not decode Class B static data until their software was updated, which caused doubt and confusion amongst early Class B users.

Nowadays most all Class A transponders have now been updated and can decode all Class B info fine, BUT...

Unfortunately there was a related lag in the writing of NMEA 2000 PGNs to match the 0183 AIS messages. The PGN equivalents of the Class B Static data messages 24a & 24b did not become official until a couple of years after the other PGNs, and hence some manufacturers used proprietary PGNs in their transponders and multifunction displays in order to make AIS over N2K possible. Both Navico and Raymarine did this and it worked find as long as you used the same manufacturer's transponder (or receiver) and MFD.

But now that there are numerous choices in NMEA 2000 transponders and displays, some users are finding that those proprietary PGNs are a problem. A Simrad AI50, for instance, will not deliver a standard Class B static data PGN to the new Furuno TZTouch MFDs; you'll see the target but not its name, dimensions, and boat type. Similarly, if you buy a new third party NMEA 2000 transponder, some MFDs like Raymarine C- and E- Wides won't see the Class B Static data unless their software is updated to understand the standard PGN. The first page of this document is an attempt to show exactly which transponders and displays have fully adopted the standard AIS PGNs, and to encourage the manufacturer's to bring those that don't up to date.

AIS Class B Standards reference information

Class B units are defined in Recommendation ITU-R M.1371 and test standard IEC 62287.

IMO standard for Class B AIS		
IEC 62287-1	current, published Feb 2011	replaces 2006 version
http://shop.bsigroup.com/ProductDetail/?pid=000000000030212980		
http://www.techstreet.com/cgi-bin/results?searchText=IEC%2062287-1&sid=msn		
http://webstore.ansi.org/RecordDetail.aspx?sku=IEC%2062287-1%20Ed.%202.0%20en:2010&source=msn&adgroup=iec		
ITU Recommendation M.1371	current (-4), approved April 2010	
Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band		
http://www.itu.int/rec/R-REC-M.1371/en		
http://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.1371-4-201004-I!!PDF-E.pdf		
see table 43 page 98 for AIS message list		
and footnote 8 to that table (which seems incorrect and should be superceeded)		
note message 19 can be used by Class B stations when interrogated by a Class A or base station. see section 2.1.2.3 page 74		

NMEA 2000 AIS PGN detail

129038	AIS Class A Position Report	This parameter group provides data associated with the ITU-R M.1371 Messages 1, 2, and 3 Position Reports, autonomous, assigned, and response to interrogation, respectively. An AIS device may generate this parameter group either upon receiving a VHF data link message 1,2 or 3, or upon receipt of an ISO or NMEA request PGN (see ITU-R M.1371-1 for additional information).	Corrigend 1-2011		
129039	AIS Class B Position Report	This parameter group provides data associated with the ITU-R M.1371 Message 18 Standard Class B Equipment Position Report. An AIS device may generate this parameter group either upon receiving a VHF data link message 18, or upon receipt of an ISO or NMEA request PGN (see ITU-R M.1371-1 for additional information).	Corrigend 1-2009		
129040	AIS Class B Extended Position Report	This parameter group provides data associated with the ITU-R M.1371 Message 19 Extended Class B Equipment Position Report containing position and static information. An AIS device may generate this parameter group either upon receiving a VHF data link message 19, or upon receipt of an ISO or NMEA request PGN.	Corrigend 1-2009	replaced by 129809 and 129810.	Can be used (rare) in interrogation mode. It takes more than the two slots Class B is allowed, but can be used if extra slots are reserved.
129041	AtoNAIS Aids to Navigation (AtoN) Report	This PGN provides information received from an AtoN AIS station conforming to ITU-R M.1371-4 Message 21. The AtoN station maybe mounted on an aid-to-navigation or this message may be transmitted by a fixed station when the functionality of an AtoN stationis integrated into the fixed station. This message is typically transmitted autonomously at a rate of once every three (3) min. Otherreporting rates are possible when the AtoN device has received an assigned mode command (Message 16) via the VHF data link, orby an external command such as PGN 129804 - AIS Assignment Mode Command.	new, see Corrigenda 2-2010		
129792	AIS DGNSS Broadcast Binary Message	This parameter group provides data associated with the ITU-R M.1371 Message 17 GNSS Broadcast Binary Message containing DGNSS corrections from a base station. An AIS device may generate this parameter group either upon receiving a VHF data link message 17, or upon receipt of an ISO or NMEA request PGN (see ITU-R M.1371-1 for additional information).			
129793	AIS UTC and Date Report	This parameter group provides data from ITU-R M.1371 message 4 Base Station Report providing position, time, date, and current slot number of a base station, and 11 UTC and date response message providing current UTC and date if available. An AIS device may generate this parameter group either upon receiving a VHF data link message 4 or 11, or upon receipt of an ISO or NMEA request PGN.			
129794	AIS Class A Static and Voyage Related Data	This parameter group provides data associated with the ITU-R M.1371 Message 5 Ship Static and Voyage Related Data Message. An AIS device may generate this parameter group either upon receiving a VHF data link message 5, or upon receipt of an ISO or NMEA request PGN.	Corrigend 2-2009		
129795	AIS Addressed Binary Message	This parameter group provides data associated with the ITU-R M.1371 Message 6 Addressed Binary Message supporting address communication of binary data. An AIS device may generate this parameter group either upon receiving a VHF data link message 6, or upon receipt of an ISO or NMEA request PGN.	Corrigend 2-2009		
129796	AIS Acknowledge	This parameter group provides data associated with the ITU-R M.1371 Messages 7 Binary Acknowledge Message and 13 Safety Related Acknowledge Message. Message 7 acknowledges receipt of message 6 while message 13 acknowledges receipt of message 14. An AIS device may generate this parameter group either upon receiving a VHF data link message 7 or 13, or upon receipt of an ISO or NMEA request PGN			

129797	AIS Binary Broadcast Message	This parameter group provides data associated with the ITU-R M.1371 Message 8 Binary Broadcast Message supporting broadcast communication of binary data. An AIS device may generate this parameter group either upon receiving a VHF data link message 8, or upon receipt of an ISO or NMEA request PGN.	Corrigend 2-2009		
129798	AIS SAR Aircraft Position Report	This parameter group provides data associated with the ITU-R M.1371 Message 9 SAR Aircraft Position Report Message for Airborne AIS units conducting Search and Rescue operations. An AIS device may generate this parameter group either upon receiving a VHF data link message 9, or upon receipt of an ISO or NMEA request	Corrigend 2-2009		
129799	Radio Frequency/Mode/	This PGN provides status and control for a Radiotelephone, connected to a NMEA 2000 network. The Radiotelephone will transmit and receive status along with remote control and repeater products			
129800	AIS UTC/Date Inquiry	This parameter group provides data associated with the ITU-R M.1371 Message 10 UTC and Date Inquiry Message used to request current UTC and date. An AIS device may generate this parameter group either upon receiving a VHF data link message 10, or upon receipt of an ISO or NMEA request PGN.			
129801	AIS Addressed Safety Related Message	This parameter group provides data associated with the ITU-R M.1371 Message 12 Addressed Safety Related Message supporting addressed communication of safety related data. An AIS device may generate this parameter group either upon receiving a VHF data link message 12, or upon receipt of an ISO or NMEA request PGN.	Corrigend 2-2009		
129802	AIS Safety Related Broadcast Message	This parameter group provides data associated with the ITU-R M.1371 Message 14 Safety Related Broadcast Message supporting broadcast communication of safety related data. An AIS device may generate this parameter group either upon receiving a VHF data link message 14, or upon receipt of an ISO or NMEA request PGN.	Corrigend 2-2009		
129803	AIS Interrogation	This parameter group provides data associated with the ITU-R M.1371 Message 15 Interrogation Message used to request a specific ITU-R M.1371 message resulting in responses from one or more AIS mobile units. An AIS device may generate this parameter group either upon receiving a VHF data link message 15, or upon receipt of an ISO or NMEA request PGN.			
129804	AIS Assignment Mode Command	This parameter group provides data associated with the ITU-R M.1371 Message 16 Assigned Mode Command Message for assigning specific behavior by a competent authority. An AIS device may generate this parameter group either upon receiving a VHF data link message 16, or upon receipt of an ISO or NMEA request PGN.			
129805	AIS Data Link Management Message	This parameter group provides data associated with the ITU-R M.1371 Message 20 Data Link Management Message for reserving slots for base stations. An AIS device may generate this parameter group either upon receiving a VHF data link message 20, or upon receipt of an ISO or NMEA request PGN.			
129806	AIS Channel Management	This parameter group provides data associated with the ITU-R M.1371 Message 22 Channel Management Message supportingmanagement of transceiver modes and channels by a base station. An AIS device may generate this parameter group either uponreceiving a VHF data link message 5, or upon receipt of an ISO or NMEA request PGN. The Command Group Function PGN126208 may be used with this PGN to configure static and voyage related parameters (see ITU-R M.1371-1 for additionalinformation).	Corrigend 1-2009		
129807	AIS Group Assignment	The Group Assignment Command is transmitted by a base station when operating as a controlling unit for the AIS Stations.	Corrigend 1-2011	Corrigend 1-2009	
129808	DSC Call Information	This PGN provides Digital Selective Calling (DSC) data according to ITU M.493-9 with optional expansion according to ITU M.821-1. DSC is a paging system that is used to automate distress alerts sent over terrestrial communication systems such as VHF, MF and HF marine radio systems. DSC provides a mechanism to report significantly more information regarding a distress call rather than just the distress itself. Products equipped with DSC will transmit and receive this information.			
129809	AIS Class B "CS" Static Report, Part A	This parameter group is used by Class B "CS" shipborne mobile equipment each time Part A of ITU-R M. 1372 Message 24 is received. This parameter group is the first of two parts, the second being transmitted in PGN 129810.	Corrigend 1-2011	Corrigend 1-2009	

129810	AIS Class B	This parameter group is used by Class B "CS" shipborne mobile equipment each time Part B of ITU-R M. 1372 Message 24 is received. This parameter group is the second of two parts, the first being transmitted in PGN 129809.	Corrigend 1-2011	Corrigend 1-2009	

http://standards.nmea.org/NSNA/corrigenda

Corrigendum 1-2011	http://standards.nmea.org/NSNA/corrigenda/nmea-2000/nmea-2000-corrigendum-1-2011.pdf
Corrigendum 2-2010	http://standards.nmea.org/NSNA/corrigenda/nmea-2000/nmea-2000-corrigendum-2-2010.pdf
Corrigendum 1-2009	http://standards.nmea.org/NSNA/corrigenda/nmea-2000/nmea-2000-corrigendum-1-2009.pdf

coming updates

	Standard	Project	Status	Anticipated Completion	URL
NMEA Standards Update March 2012	NMEA 2000	AIS PGN Update	Committee adding updates to AIS PGNs	30-Mar-2012	http://www.nmea.org/Assets/20120315%20nmea%20standards%20update%20march%202012.pdf