Auto Anchor 601

Message Formats

Revision 1.0

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RMSD Ltd

Contents

Introduction

The Auto Anchor 601 communications complies with the NMEA0183 communications protocol. Messages are sent and received with the PAAN proprietary message identifier.

NMEA0183 Protocol

Overview

The NMEA0183 message format that the AA601 conforms with is a plain text serial protocol, normally operating at 4800 baud, 1 stop bit, no parity.

Messages begin with the '$', and end with a carriage return/line feed character sequence (ascii code 13 followed by ascii code 10). Each message consists of several fields, each separated by a ',' character, then a final checksum field, delimited by a '*' character. The checksum is calculated as the xor of the characters in each message.

An example of a message:

$PAAN,STAT,10.1,C,0,13.5,0,0,0*2A<CR><LF>

Two way communications

Because NMEA0183 is only designed for a communicating in a single direction, RMSD has defined when it is safe to send commands to the Auto Anchor without colliding with sentences coming out of it. After each status message is output from an AA601 unit, there will be at least 500ms of time to start sending any commands in which the AA601 is guaranteed to not be sending data. Once you start sending commands, you can send as many as you like. The AA601 will only send a new status message if no messages have been received for at least 500ms.

Input Messages

Settings

This message is used to upload new configuration settings to the AA601.

$PAAN,SETCONF,pp,cc,mm*hh

Field	Meaning
pp	The windlass profile to use. 0 is for a custom windlass, and must be accompanied with information about the custom windlass
cc	Circumference of gypsy for a custom windlass. Only chain-only windlasses are supported for custom windlasses.
mm	Max rode on board (This setting is provided, but is not used by AA602)
hh	NMEA checksum

Clear / Reset

Use this message to clear the rode to zero. You may also use it to reload factory defaults if a problem occurs with device configuration.

$PAAN,CLR,mm*hh

Field	Meaning
mm	0 = Reset rode distance to 0, and resets sensor detection 1 = Load factory defaults
hh	NMEA checksum

Message Control

Use this message to control message output from the device. The default message output is AASTAT once per second. You can schedule other regular messages, or simply ask for a one off message (this is useful for finding the current configuration for example).

$PAAN,MSG,mm,tt.t*hh

Field	Meaning
mm	Specify the message to control output rate for. Possibilities are: • AASTAT Default rate is 1 per second • VERSION Defaults to being disabled • CONFIG Defaults to being disabled
tt.t	Number of seconds between updates. The allowable resolution of this is 0.1 seconds. Setting to 0 disables the message output. Setting to -1 immediately outputs the requested message, but does nothing to the previously specified message rate.
hh	NMEA checksum

Demo Mode

Use this message to enable a demonstration mode.

$ PAAN,DEMO,d *hh

Field	Meaning
d	0 = Normal Mode 1 = Demo Mode (Unit moves down to 10m and back to 0m repeatedly. Real pulses from sensor are ignored)
hh	NMEA checksum

Output Messages

Status

This message is sent to indicate the current status of the anchor windlass, indicating the amount of rode deployed, as well as some status information and error codes.

$PAAN,STAT,rr.r,c,d,vv.v,ss,ll.l,ee,rr*hh

Field	Meaning
rr.r	This specifies the amount of rode deployed, in meters.
c	This field is 'C' when in the chain part of the rode, and 'R' when in the rope part of the rode
d	0 = Windlass is stopped 1 = Windlass is moving down 2 = Windlass is moving up
vv.v	The voltage on the motor in volts
ss.s	Speed of the windlass, in RPM
ll.l	The load on the motor in kg. This field will be empty when custom windlass is selected.
ee	A numerical code indicating the last error to occur. Once an error occurs, this will be output until a new error occurs. Possible codes are: 0 = No error has occurred 1 = Sensor wiring error 2 = Motor voltage detection wiring error 3 = Solenoid up detect wiring error 4 = Solenoid down detect wiring error 5 = Motor under voltage error 6 = Sensor signal too small 7 = Excessive sensor signal (Usually due to magnet mounted too close to sensor) 8 = Sensor pulse timeout (If motor running, but no sensor pulses are detected) 9 = Windlass not installed (This is sent if none of the wires are connected) When a unit is in demo mode, this field no longer contains an error code, but contains the string "DEMO"
pp	Number of pulses since last status message
rr	Total running time of anchor windlass motor in seconds
hh	NMEA checksum

Version Information

Contains the software and hardware version information for the AA601 unit.

$PAAN,VERSION,<sw version>,ddmmyy,<hw version>,<serial number>*hh

Field	Meaning
sw version	The version of the firmware loaded into the AA601.
ddmmyy	Firmware build date: dd = Day mm = Month yy = Year
hw version	An arbitrary text string describing the hardware version
hh	NMEA checksum

Windlass Configuration

This message contains the current configuration settings of the AA601.

$PAAN,CONFIG,pp,cc,nn,mm*hh

Field	Meaning
pp	The windlass profile to use. 0 is for a custom windlass, and must be accompanied with information about the custom windlass
cc	Circumference of gypsy for a custom windlass. Only chain-only windlasses are supported for custom windlasses.
nn	The number of windlass profiles that are in the aa601 memory
mm	Max rode on board (This setting is provided, but is not used by AA602)
hh	NMEA checksum