

[EAV W/O GYRO]

The echo averaging feature can be used without a gyrocompass. Select [ON] to use the feature without a gyrocompass (default: [OFF]).

[ECDIS]

Select the ECDIS communication method, [SERIAL] or [LAN]. Select [OFF] for no ECDIS connection (default: [OFF]).

[EXT BRILL CONTROL]

Select [ON] to adjust the brilliance of the monitor unit from external equipment.

[SSD SUB OUTPUT]

Note: Not used with magnetron radars.

For solid state radars, select [ON] to output the analog signals from TB803 #11 to 16 and TB804 in the antenna unit (default; [OFF]).

[OVERLAY1 (2)]

Note: This menu is **NOT** available for C-type radars.

When an ECDIS is connected, the radar picture can be overlaid on the ECDIS. Set the items on this menu to correctly overlay the radar picture on ECDIS.

Note: The overlay output is less accurate than the sub monitor output from the Antenna Unit, especially in the areas mentioned below. Therefore, only use the overlay with an ECDIS.

- Distance accuracy/resolution
- Bearing accuracy/resolution
- Sweep
- Echo picture
- Range

When the echo image is **NOT** used with ECDIS, use the signal from the Antenna Unit.

OVERLAY1	
1	BACK
2	HDG ALIGNMENT 000.0°
3	BEARING PULSE 360/8192
4	HDG POLARITY LOW/HIGH
5	TRIG WIDTH SHORT/LONG

[RP UPDATE]

For C-type and A/B/W radars with Radar Plotter functionality, conduct updates for the RP board (CC6).

- [APPLICATION]: Update the RP board (CC6) software.
- [OS]: Update the RP board (CC6) OS (operating system).
- [CHART SYMBOL]: Update the RP board (CC6) chart symbols.
- [REMOVE USB MEMORY]: Remove a USB flash memory from the RP board (CC6).

RP UPDATE	
1	BACK
2	APPLICATION
3	OS
4	CHART SYMBOL
5	REMOVE USB MEMORY

3. ADJUSTMENTS

[SHUTTLE FERRY SWITCH]

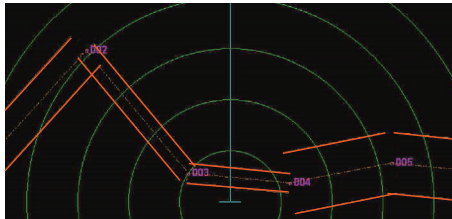
Note: This menu is **NOT** available for C-type radars.

Select a port to detect a navigation direction of a shuttle ferry (default: [RS-232C]).

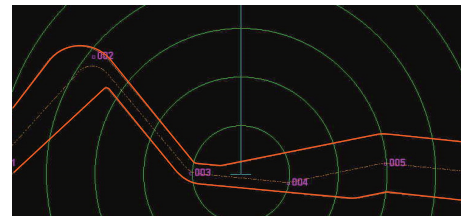
[ECDIS ROUTE DISPLAY]

Note: This menu is **NOT** available for C-type radars.

Select [NORMAL] to show the routes with a straight lines, [LEGACY] to show the routes with a curve lines.



[NORMAL]
(Straight line)



[LEGACY]
(Curve line)

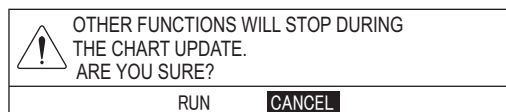
3.6 How to Control Charts

This section shows you how to install or update charts for C-type and A/B/W radars with Radar Plotter functionality.

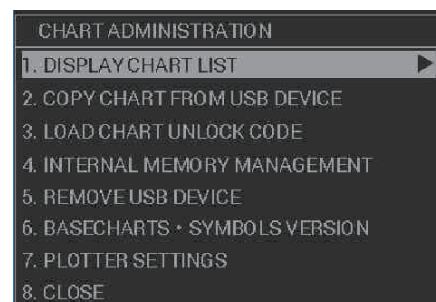
3.6.1 How to install charts

Note: Save the chart data to a USB flash memory first. You do not need to create a folder.

1. Connect the USB flash memory with chart data to the USB drive from the RP board.
2. Press the **MENU** key to open the main menu.
3. Select [INITIAL SETTINGS].
4. Select [UPDATE CHART]. The following message appears.



5. Select [RUN]. The message "PROCESSING. PLEASE WAIT." appears, then the [CHART ADMINISTRATION] menu appears.



6. Select [COPY CHART FROM USB DEVICE] to display the list for data in the USB flash memory.

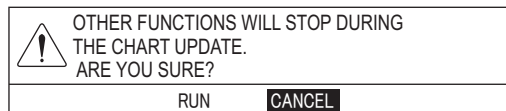
7. Select the chart data to copy.
8. Select [SELECT CHART TO COPY]. The confirmation message appears.
9. Select [RUN] to copy the chart data.
10. Click the left button.
11. Do one of the following methods to unlock the chart data.
How to unlock the chart data automatically
Note: Save the unlock code to the USB flash memory first. The file extension is "uc".
 - 1) Select [LOAD CHART UNLOCK CODE] in the [CHART ADMINISTRATION] menu to display the list for data in the USB flash memory.
 - 2) Select the file for the unlock code. The confirmation message appears.
 - 3) Select [RUN]. The message "UNLOCK CODE VERIFIED." appears.
 - 4) Click the left button.How to unlock the chart data manually
 - 1) Select [1. DISPLAY CHART LIST] in the [CHART ADMINISTRATION] menu to display the chart list.
 - 2) Select the locked chart data (displayed with yellow letters), then click the left button to display the character entry window.
 - 3) Set the unlock code as described below.
Operate the trackball or the wheel to select a character, then click the left button to confirm selection. Repeat this step to select all other characters. Select [ENTER] then click the left button.
The message "UNLOCK CODE VERIFIED." appears.
 - 4) Click the left button.
12. When unlocking the chart data automatically, select [5. REMOVE USB DEVICE]. The message "USB DEVICE CAN BE SAFELY REMOVED." appears. Click the left button then remove the USB device.
13. Select [CLOSE]. The confirmation message appears.
14. Select [RUN]. The system restarts.

3.6.2 How to update charts

Note 1: Save the chart data to a USB flash memory first. You do not need to create a folder.

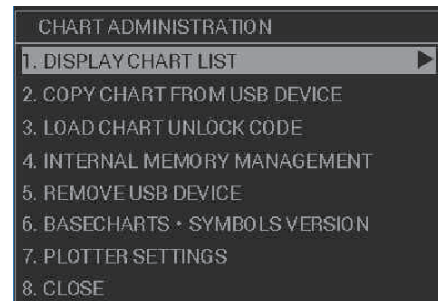
Note 2: Before updating charts, delete the old chart data. If needed, take backups for an unlock code.

1. Connect the USB flash memory with chart data on it in the USB drive from the RP board.
2. Press the **MENU** key to open the main menu.
3. Select [INITIAL SETTINGS].
4. Select [UPDATE CHART]. The following message appears.



5. Select [RUN]. The message "PROCESSING. PLEASE WAIT." appears, then the [CHART ADMINISTRATION] menu appears.

After restarting, the unlock code is saved in the USM flash memory. The file name is 20 characters of this system ID, file extension: uc.



6. Select [DISPLAY CHART LIST] to display the chart list.
7. Select the chart data to delete then press the **F1** key.
8. Select [RUN]. The message "CHART DELETION COMPLETE" appears.
9. Click the left button.
10. Follow steps 6 to 14 in paragraph 3.6.1.

4. INPUT/OUTPUT DATA

NOTICE

IMO-type radar(s) must be interconnected to the following type approved sensors.

For other radar types, it is recommended to connect the following type approved sensors:

- EPFS meeting the requirements of the IMO resolution MSC.112(73).
- Gyrocompass (or equivalent devices) meeting the requirements of the IMO resolution A.424(XI).
- SDME meeting the requirements of IMO resolution MSC.96(72).

The radar may be interconnected via HUB-3000 to other FURUNO processing units having approved LAN ports.

4.1 Processor Unit

Input and output data are shown in the table below.

Note: This radar accepts position data fixed by WGS-84 geodetic datum only. Set the datum to WGS-84 on the EPFS (GPS, etc.) connected to this radar. If other type of datum is input, the error message "DATUM" appears and the AIS feature is inoperative.

Input

Data	Specification	Contents	Remarks
Heading signal	AD-10 format	External AD-100	AD-10 and IEC 61162 are switched by menu setting.
	IEC 61162-2*, IEC 61162-450		
Speed signal	IEC 61162-1, IEC 61162-450		
Navaid data	IEC 61162-1	Position, course, speed, waypoint, route, time, wind data, current data, depth, temperature, roll, pitch	For IMO-type, IEC-61162-1 Edition 5 is required.
	IEC 61162-450		
Alarm handling signal	Contact closure		Input from bridge alert management system (BAMS)
	IEC 61162-1, IEC 61924-2	ACK, ACM, HBT	Input from BAMS ACK and ACM are switched by menu setting.
AIS signal	IEC 61162-2, IEC 61162-450		
Consort signal**	NMEA0183		
GPS buoy signal**	NMEA0183		

*: Data input cycle must be more than 40 Hz (high speed craft) or 20 Hz (conventional ships).

** : For C-type radars only

4. INPUT/OUTPUT DATA

Output

Data	Specification	Contents	Remarks
Radar system data	IEC 61162-1, RS-232C, IEC 61162-450	RSD, OSD, TLL	For ECDIS, PC plotter
TT data**	IEC 61162-1, IEC 61162-450	TTD, TTM, TLB	For ECDIS
Alert handling signal	IEC 61162-1, IEC 61924-2, IEC 61162-450	ALR, ALF, ALC, ARC, HBT, EVE	For BAMS ALR and ALF are switched by menu setting.
Sub monitor signal	HD, BP Trigger, Video		1 port for radar 2 ports for ECDIS
External LCD monitor signal	DVI	Same as main display unit	2 systems in total
VDR	R, G, B, H, V, IEC 61162-450	Same as main display unit	1 port
Alert signal	Contact closure	Output to alarm system by using photo-relay	4 systems, Output contents are selected by menu.

** : These sentences are output in order of targets close to the own ship. The output sentence and mode can be set at the [TT PRESET] menu (See section 3.5.5). The baudrate can be set at the [BAUD RATE] menu (See section 3.5.6).

IEC 61162 input sentence and priority

Contents	Sentence and priority
Heading (True)*1	THS>HDT*1*2>VHW*4>HDG*5
Heading (Magnetic)*5	HDG*5>HDM*5>VHW*4
Magnetic deviation*5	HDG*5>RMC
AIS target message, alert	VDM, VDO, VSD, ABK, ALR
Date, Time	ZDA
Position*3	GNS>GGA>RMC>GLL or GLL>GNS>GGA>RMC
Datum	DTM
Course over the ground	VTG>RMC
Speed over the ground (SOG)(GPS)	VTG>RMC
Speed over the ground (LOG (BT))	VBW
Speed through the water (STW)	VBW>VHW
Alert handling	ACK, ACN, HBT
Waypoint	RMB>BWR>BWC
Route	WPL, RTE
Wind Speed and angle (Theoretical, True)	MWV>VWT*2
Wind Speed and angle (relative)	MWV>VWR*2
Depth	DPT >DBT>DBS*2>DBK*2
Water Temperature	MTW
Current	VDR, CUR
Rate of turn	ROT
Monitor Setting	DDC, RAQ

*1: THS and HDT are IEC 61162-2. All other sentences are IEC 61162-1 ed5.

*2: For retrofit.

*3: To priority of GLL data, see "[PRIORITIZE GLL]" on page 3-21.

*4: This is **NOT** available for IMO-type radars installed with software version "01.**".

*5: For C-type radars.

IEC 61162 output sentence

Contents	Sentence and priority
Target L/L	TLL * ⁶
Radar system data	RSD
Own ship data	OSD
TT target data	TTD, TLB, TTM
Alert handling	ALR, ALF, ALC, ARC, HBT
Activity information	EVE
AIS target message, alert	ABM, BBM, ACK, VSD
Monitor Setting	DDC

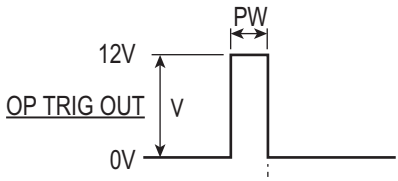
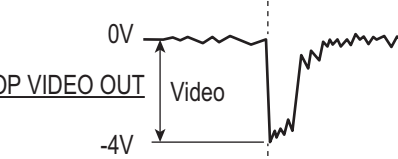
*6: This is **NOT** available for IMO/A/R-type radars installed with software version "01.**".

4.2 Sub Monitor

The specifications and timing of sub monitor signals are shown below.

Signal Name	Specification	Signal and timing
OP_HD_ OUT	<ul style="list-style-type: none"> Voltage (V): 0 to 12 V Impedance: 110 Ω Pulse width (PW): 216 to 432 ms 0.625 s (24 rpm, ECDIS overlay) 0.357 s (42 rpm, ECDIS overlay) Pulse interval (PI): 2.5 s (24 rpm) 1.4 s (42 rpm) Logic: Negative 	
OP_BP_ OUT	<ul style="list-style-type: none"> Voltage (V): 0 to 12 V Impedance: 110 Ω Interval (t): 6.9 ms (24 rpm) 4.0 ms (42 rpm) 	

4. INPUT/OUTPUT DATA

Signal Name	Specification	Signal and timing
OP_TRIG_OUT	<ul style="list-style-type: none"> • Voltage (V): 0 to 12 V • Impedance: 110 Ω • Pulse width (PW): <ul style="list-style-type: none"> 5 to 15 μs (magnetron radar) 8 μs (solid state radar) 5 μs (ECDIS overlay) 	 <p>The diagram shows a pulse signal labeled 'OP TRIG OUT'. The pulse starts at 0V, rises to 12V, and then returns to 0V. The pulse width is labeled 'PW'. The signal is shown relative to a 0V reference line.</p>
OP_VIDEO_OUT	<ul style="list-style-type: none"> • Video: 4 Vp-p/100 dB • Impedance: 75 Ω 	 <p>The diagram shows a video signal labeled 'OP VIDEO OUT'. The signal is shown relative to a 0V reference line. The signal has a peak-to-peak amplitude of 4V, ranging from 0V to -4V. The signal is labeled 'Video' and 'Video: Video signal (75 ohm terminated)'. A vertical dashed line indicates a 0 NM delay.</p>

APPENDIX 1 JIS CABLE GUIDE

Cables listed in the manual are usually shown as Japanese Industrial Standard (JIS). Use the following guide to locate an equivalent cable locally.

JIS cable names may have up to 6 alphabetical characters, followed by a dash and a numerical value (example: DPYC-2.5).

For core types D and T, the numerical designation indicates the *cross-sectional Area (mm²)* of the core wire(s) in the cable.

For core types M and TT, the numerical designation indicates the *number of core wires* in the cable.

1. Core Type

D: Double power line

T: Triple core power line

M: Multi core

TT: Twisted pair communications
(1Q=quad cable)

2. Insulation Type

P: Ethylene Propylene Rubber

3. Sheath Type

Y: PVC (Vinyl)

4. Armor Type

C: Steel

5. Sheath Type

Y: Anticorrosive vinyl sheath

6. Shielding Type

SLA: All cores in one shield, plastic tape w/aluminum tape

-SLA: Individually shielded cores, plastic tape w/aluminum tape



DPYCY



TPYCY



MPYC-4



TTYCSLA-4

EX: ^{1 2 3 4 5 6} TTYCSLA - 4
 Designation type # of twisted pairs

EX: ^{1 2 3 4} MPYC - 4
 Designation type # of cores

The following reference table lists gives the measurements of JIS cables commonly used with Furuno products:

Type	Area	Core Diameter	Cable Diameter	Type	Area	Core Diameter	Cable Diameter
DPYC-1.5	1.5mm ²	1.56mm	11.7mm	TTYCSLA-1	0.75mm ²	1.11mm	9.4mm
DPYC-2.5	2.5mm ²	2.01mm	12.8mm	TTYCSLA-1T	0.75mm ²	1.11mm	10.1mm
DPYC-4	4.0mm ²	2.55mm	13.9mm	TTYCSLA-1Q	0.75mm ²	1.11mm	10.8mm
DPYC-6	6.0mm ²	3.12mm	15.2mm	TTYCSLA-4	0.75mm ²	1.11mm	15.7mm
DPYC-10	10.0mm ²	4.05mm	17.1mm	TTYCY-1	0.75mm ²	1.11mm	11.0mm
DPYCY-1.5	1.5mm ²	1.56mm	13.7mm	TTYCY-1T	0.75mm ²	1.11mm	11.7mm
DPYCY-2.5	2.5mm ²	2.01mm	14.8mm	TTYCY-1Q	0.75mm ²	1.11mm	12.6mm
DPYCY-4	4.0mm ²	2.55mm	15.9mm	TTYCY-4	0.75mm ²	1.11mm	17.7mm
MPYC-2	1.0mm ²	1.29mm	10.0mm	TTYCY-4SLA	0.75mm ²	1.11mm	19.5mm
MPYC-4	1.0mm ²	1.29mm	11.2mm	TTYCYSLA-1	0.75mm ²	1.11mm	11.2mm
MPYC-7	1.0mm ²	1.29mm	13.2mm	TTYCYSLA-4	0.75mm ²	1.11mm	17.9mm
MPYC-12	1.0mm ²	1.29mm	16.8mm				
TPYC-1.5	1.5mm ²	1.56mm	12.5mm				
TPYC-2.5	2.5mm ²	2.01mm	13.5mm				
TPYC-4	4.0mm ²	2.55mm	14.7mm				
TPYCY-1.5	1.5mm ²	1.56mm	14.5mm				
TPYCY-2.5	2.5mm ²	2.01mm	15.5mm				
TPYCY-4	4.0mm ²	2.55mm	16.9mm				

APPENDIX 2 DIGITAL INTERFACE

Digital Interface

• **Input sentence**

ABK, ACK, ACN, ALR, BWC, BWR, CUR, DBK*¹, DBS*¹, DBT, DDC, DPT, DTM, GGA, GLL, GNS, HBT, HDG*², HDM*², HDT*¹, MTW, MWV, OSD, RAQ, RMB, RMC, ROT, RTE, THS, TLL*³, TTM*², VBW, VDM, VDO, VDR, VHW, VSD, VTG, VWR*¹, VWT*¹, WPL, ZDA

• **Output sentences**

ABM, ACK, AIQ, ALC, ALF, ALR, ARC, BBM, DDC, EVE, HBT, OSD, RSD, TLB, TLL*³, TTD, TTM, VSD

*¹: For retrofit.

*²: For C-type radars.

*³: NOT for IMO/A-type radars installed with software version "01.**".

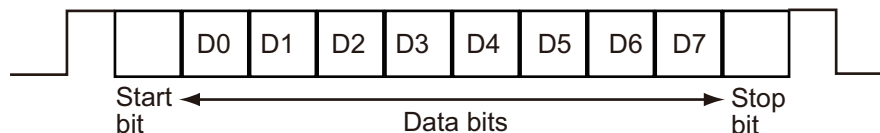
Data reception

Data is received in serial asynchronous form in accordance with the standard referenced in IEC 61162-2 or IEC 61162-1 Ed.5.

The following parameters are used:

Baud rate: 38,400 bps (HDT, THS, !AIVDM, !AIVDO, !AIABK, \$AIALR). The baud rate of all other sentences is 4800 bps

Data bits: 8 (D7 = 0), Parity: none, Stop bits: 1



Data Sentences

Input sentences

ABK - AIS addressed and binary broadcast acknowledgement

\$**ABK,xxxxxxxx,x,x,x,x,x,*hh<CR><LF>
1 2 3 4 5

1. MMSI of the addressed AIS unit (No use)
2. AIS channel of reception (No use)
3. Message ID (No use)
4. Message sequence number (No use)
5. Type of acknowledgement (See below.)

0 = Message (6 or 12) successfully received by the addressed AIS unit

1 = Message (6 or 12) was broadcast, but no acknowledgement by the addressed AIS unit

2 = Message could not be broadcast (i.e. quantity of encapsulated data exceeds five slots)

3 = Requested broadcast of message (8, 14, or 15) has been successfully completed.

4 = Late reception of a message 7 or 13 acknowledgement that was addressed to this AIS unit (own-ship) and referenced a valid transaction.

5 = Message has been read and acknowledged on a display unit.

ACK - Acknowledge alarm

```
$**ACK,xxx,*hh<CR><LF>
 1
```

1. Unique alarm number (identifier) at alarm source (000 to 999)

ACN - Alert command

```
$**ACN,hhmmss.ss,aaa,x.x,x.x,c,a*hh<CR><LF>
 1      2 3 4 5 6
```

1. Time (No use)
2. Manufacturer mnemonic code (3 digit alphanumeric code, null)
3. Alert identifier (0 to 999999)
4. Alert instance (1 to 999999, null)
5. Alert command (A=Acknowledge, Q=Request /Repeat information, O=Responsibility transfer, S=Silence)
6. Sentence status flag (C)

ALR - Set alarm state

```
$**ALR,hhmmss.ss,xxx,A,A,c--c,*hh<CR><LF>
 1      2 3 4 5
```

1. Time of alarm condition change, UTC (No use)
2. Unique alarm number (identifier) at alarm source (000 to 999, null)
3. Alarm condition (A=threshold exceeded, V=not exceeded)
4. Alarm acknowledge state (A=acknowledged, V=not acknowledged)
5. Alarm description text (alphanumeric)

BWC - Bearing and distance to waypoint – Great circle

```
$**BWC,hhmmss.ss,lll.ll, a,yyyyy.yy,a,x.x,T,x.x,M,x.x,N,c--c,a*hh<CR><LF>
 1      2 3      4 5 6 7 8 9 10 11 12 13
```

1. UTC of observation (No use)
2. Waypoint latitude (0000.0000 to 9000.0000)
3. N/S
4. Waypoint longitude (00000.0000 to 18000.0000)
5. E/W
6. Bearing, degrees true (No use)
7. Unit, True (No use)
8. Bearing, degrees magnetic (No use)
9. Unit, Magnetic (No use)
10. Distance, nautical miles (No use)
11. Unit, N (No use)
12. Waypoint ID (Max. 15 characters)
13. Mode Indicator (A=Autonomous, D=Differential, null*)
 - *: For IMO-type or R-type radar, null is invalid.

DBT - Depth below transducer

\$**DBT,x,x,f,x,x,M,x,x,F,*hh<CR><LF>
1 2 3 4 5 6

1. Water depth (0.00 to 99999.99)
2. feet
3. Water depth (0.00 to 99999.99)
4. Meters
5. Water depth (0.00 to 99999.99)
6. Fathoms

DDC - Display dimming control

\$**DDC,a,xx,a,a*hh<CR><LF>
1 2 3 4

1. Display dimming preset (D=Daytime, K=Dusk, N=Nighttime, null)
2. Brightness percentage (00 to 99, null)
3. Color palette (No use)
4. Sentences status flag (C)

DPT - Depth

\$**DPT,x,x,x,x,x,*hh<CR><LF>
1 2 3

1. Water depth relative to the transducer, meters (0.00 to 99999.99)
2. Offset from transducer, meters (-99.99 to 99.99)
3. Minimum range scale in use (No use)

DTM - Datum reference

\$**DTM,ccc,a,x,x,a,x,x,a,x,x,ccc,*hh<CR><LF>
1 2 3 4 5 6 7 8

1. Local datum (W84=WGS84, W72=WGS72, S85=SGS85, P90=PE90, three characters)
2. Local datum subdivision code (No use)
3. Lat offset, min (No use)
4. N/S (No use)
5. Lon offset, min (No use)
6. E/W (No use)
7. Altitude offset, meters (No use)
8. Reference datum (No use)

GGA - Global positioning system fix data

\$**GGA,hhmmss.ss,llll.lll,a,yyyyy.yyy,a,x,xx,x,x,x,x,M,x,x,M,x,x,xxxx,*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13 14

1. UTC of position (No use)
2. Latitude (0000.0000 to 9000.0000)
3. N/S
4. Longitude (00000.0000 to 18000.0000)
5. E/W
6. GPS quality indicator (1 to 8)
7. Number of satellite in use (No use)
8. Horizontal dilution of precision (0.00 to 999.99)
9. Antenna altitude above/below mean sealevel (No use)
10. Unit, m (No use)
11. Geoidal separation (No use)
12. Unit, m (No use)
13. Age of differential GPS data (0 to 999, null)
14. Differential reference station ID (No use)

APPENDIX 2 DIGITAL INTERFACE

GLL - Geographic position, latitude/longitude

```
$**GLL,lll,ll,a,yyyy.yy,a,hmmss.ss,A,a,*hh<CR><LF>
```

1. Latitude (0000.0000 to 9000.0000)
2. N/S
3. Longitude (00000.0000 to 18000.0000)
4. E/W
5. UTC of position (No use)
6. Status (A=data valid, V=data not valid)
7. Mode indicator (A=Autonomous, D=Differential, E=Estimated, M=Manual input, S=Simulator)

GLL - Future position

```
$**GLL,lll,ll,a,yyyy.yy,a,hmmss.ss,A,x,x,*hh<CR><LF>
```

1. Future Latitude (0000.0000 to 9000.0000)
2. N/S
3. Future Longitude (00000.0000 to 18000.0000)
4. E/W
5. UTC of Future position (No use)
6. Display Status (A=Display, V=Hide)
7. Future Heading (0.0 to 360.0)

GNS - GNSS fix data

```
$**GNS,hmmss.ss,lll,ll,a,yyyy.yy,a,c--c,xx,x.x,x.x,x.x,x.x,x.x,x.x,a*hh<CR><LF>
```

1. UTC of position (No use)
2. Latitude (0000.0000 to 9000.0000)
3. N/S
4. Longitude (00000.0000 to 18000.0000)
5. E/W
6. Mode indicator (A, D, E, F, M, N, P, R, S)
A=Autonomous, D=Differential, E=Estimated Mode, F=Float RTK, M=Manual Input Mode, N=No fix, P=Precise, R=Real Time Kinematic, S=Simulator Mode
7. Total number of satellites in use (No use)
8. HDOP (0.00 - 999.99)
9. Antenna altitude, meters (No use)
10. Geoidal separation, meters (No use)
11. Age of differential data (0 to 999, null)
12. Differential reference station ID (No use)
13. Navigational status indicator (S=Safe, C=Caution, U=Unsafe, V=Not valid, null)

HBT - Heartbeat supervision sentence

```
**HBT,x,x,A,x*hh<CR><LF>
```

1. Configured repeat interval (1 to 999(s))
2. Equipment status (No use)
3. Sequential sequence identifier (0 to 9)

HDG - Heading, Deviation and Variation

```
--HDG,x,x,x,x,a,x,x,a*hh<CR><LF>
```

1. Magnetic sensor heading, degrees (0.0 to 359.9)
2. Magnetic deviation, degrees (0.00 to 180.00)
3. E/W
4. Magnetic variation, degrees (0.00 to 180.00)
5. E/W

HDM - Heading, Magnetic

\$--HDM,x.x,M*hh<CR><LF>
1 2

1. Heading, degrees (0.0 to 359.9)
2. Magnetic (M)

HDT - Heading, true

**HDT,x.x,T*hh<CR><LF>
1 2

1. Heading, degrees (0.0 to 359.9)
2. True (T)

MTW - Water temperature

**MTW,x.x,C<CR><LF>
1 2

1. Water temperature (-9.99 to 99.99)
2. Degrees C

MWV - Wind speed and angle

**MWV,x.x,a,x.x,a,A*hh<CR><LF>
1 2 3 4 5

1. Wind angle, degrees (0.0 to 359.9)
2. Reference (R/T)
3. Wind speed (0.0 to 999.9)
4. Wind speed units (K=km/h, M=m/s, N=knots, S=SM/h)
5. Status (A)

OSD - Own ship data

**OSD,x.x,A,x.x,a,x.x,a,x.x,x.x,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Heading, degrees true (No use)
2. Heading status (No use)
3. Vessel course, degrees true (0.0 to 359.9)
4. Course reference (B=Bottom tracking log, M=Manually entered, W=Water referenced, P=Positioning system ground reference)
5. Vessel speed (0.0 to 999.9)
6. Speed reference (B=Bottom tracking log, W=Water referenced, P=Positioning system ground reference)
7. Vessel set, degrees true, manually entered (No use)
8. Vessel drift (speed), manually entered (No use)
9. Speed units (K=km/h, N=knots, S=statute mile/h)

RAQ - Query sentence

**RAQ,ccc*hh<CR><LF>
1

1. Request sentence (DDC)

APPENDIX 2 DIGITAL INTERFACE

RMB - Recommended minimum navigation information.

```
$**RMB,A,x,x,a,CCCC,CCCC,lll.ll,a,yyyy.yy,a,x,x,x,x,A,a*hh <CR><LF>  
1 2 3 4 5 6 7 8 9 10 11 12 13 14
```

1. Data status (A=Data valid)
2. Cross track error (NM) (No use)
3. Direction to steer (No use)
4. Origin waypoint ID (No use)
5. Destination waypoint ID (Max. 15 characters)
6. Destination waypoint latitude (0000.0000 to 9000.0000)
7. N/S
8. Destination waypoint longitude (00000.0000 to 18000.0000)
9. E/W
10. Range to destination, nautical miles (No use)
11. Bearing to destination, degrees true (No use)
12. Destination closing velocity, knots (No use)
13. Arrival status (No use)
14. Mode indicator (A= Autonomous, D= Differential mode, E=Estimated (dead reckoning mode), M=Manual input mode, S= Simulator)

RMC - Recommended minimum specific GNSS data

```
$**RMC,hhmmss.ss,A,lll.ll,a,yyyy.yy,a,x,x,x,xxxxxx,x,x,a,a*hh<CR><LF>  
1 2 3 4 5 6 7 8 9 10 11 12 13
```

1. UTC of position fix (No use)
2. Status (A=data valid)
3. Latitude (0000.0000 to 9000.0000)
4. N/S
5. Longitude (00000.0000 to 18000.0000)
6. E/W
7. Speed over ground, knots (0.0 to 999.9)
8. Course over ground, degrees true (0.0 to 359.9)
9. Date (No use)
10. Magnetic variation, degrees E/W (No use)
11. E/W (No use)
12. Mode indicator (A= Autonomous mode, D= Differential mode, E=Estimated (DR), F=Float RTK, M=Manual, P=Precise, R=Real time kinematic, S= Simulator)
13. Navigational status indication (S=Safe, C=Caution, U=Unsafe, V=Navigational status not valid, null)

ROT- Rate of turn

```
$**ROT,x.x,A*hh<CR><LF>  
1 2
```

1. Rate of turn, deg/min, "-"=bow turns to port (No use)
2. Status (No use)

RTE - Routes

```
$**RTE,x,x,x,x,a,c--c,c--c, . . ,c--c*hh <CR><LF>  
1 2 3 4 5 . . n
```

1. Total number of sentences being transmitted (1 to 50, null)
2. Sentence number (1 to 50, null)
3. Sentence mode (c:complete route, all waypoints, w:working route, first listed waypoint is "FROM", second is "TO" and remaining are rest of route)
4. Route identifier (Max. 15 characters, null)
5. Waypoint "n" identifier (Max. 15 characters, null)
 - • Additional waypoint identifiers

THS - True heading and status

\$**THS,x.x,a*hh<CR><LF>

1 2

1. Heading, degrees True (0.0 to 359.9)
2. Mode indicator (A=Autonomous, E=Estimated (dead reckoning))

TLL - Target Latitude and Longitude

\$**TLL,x.x,llll,ll,a,yyyy.yy,a,c--c,hhmmss.ss,a,a*hh<CR><LF>

1 2 3 4 5 6 7 8 9

1. Target number (No use)
2. Target latitude (0000.0000 to 9000.0000)
3. N/S
4. Target longitude (00000.0000 to 18000.0000)
5. E/W
6. Target name (No use)
7. UTC of data (No use)
8. Target status (No use)
9. Reference target (No use)

TTM - Tracked Target Message

\$**TTM,xx,x.x,x.x,a,x.x,x.x,a,x.x,x.x,a,c--c,a,a,hhmmss.ss,a*hh<CR><LF>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1. Target number (00 to 99)
2. Target distance from own ship (0.000 to 99.999)
3. Bearing from own ship, degrees true/relative (0.0 to 359.9)
4. True or Relative (T, R)
5. Target speed (0.00 to 102.00, null)
6. Target course, degrees true/relative (0.0 to 359.9, null)
7. T=True or R=Relative
8. Distance of closest point of approach (0.00 to 99.99)
9. Time to CPA, min., "-" increasing (-99.99 to 99.99, null)
10. Speed/distance units (K=km, km/h, N=NM, kn, S= SM, mph)
11. Target name (other than null)
12. Target status (L=Lost, tracked target has been lost , Q=Query, target in the process of acquisition, T=Tracking)
13. Reference target (No use)
14. UTC of data (numeric in six digits, null)
15. Type of acquisition (other than null)

VBW - Dual ground/water speed

\$**VBW,x.x,x.x,a,x.x,x.x,a,x.x,a,x.x,a,*hh<CR><LF>

1 2 3 4 5 6 7 8 9 10

1. Longitudinal water speed, knots (-999.9 to 999.9)
2. Transverse water speed, knots (-999.9 to 999.9, null)
3. Status: water speed (A=data valid)
4. Longitudinal ground speed, knots (-999.9 to 999.9)
5. Transverse ground speed, knots (-999.9 to 999.9, null is invalid for IMO/R-Type radars)
6. Status: ground speed (A=data valid)
7. Stern transverse water speed, knots (No use)
8. Status: stern water speed (No use)
9. Stern transverse ground speed, knots (No use)
10. Status: stern ground speed (No use)

APPENDIX 2 DIGITAL INTERFACE

VDM - AIS VHF data-link message

!**VDM,x,x,x,a,s--s,x,*hh<CR><LF>
1 2 3 4 5 6

1. Total number of sentences needed to transfer the message (1 to 9)
2. Sentence number (1 to 9)
3. Sequential message identifier (0 to 9, null)
4. AIS channel Number (A, B, null)
5. Encapsulated ITU-R M.1371 radio message (1 to 63 bytes)
6. Number of fill-bits (0 to 5)

VDO - AIS VHF data-link own-vessel report

!**VDO,x,x,x,a,s--s,x,*hh<CR><LF>
1 2 3 4 5 6

1. Total number of sentences needed to transfer the message (1 to 9)
2. Sentence number (1 to 9)
3. Sequential message identifier (0 to 9, null)
4. AIS channel Number (A, B, C, D, null)
5. Encapsulated ITU-R M.1371 radio message (1 to 63 bytes)
6. Number of fill-bits (0 to 5)

VDR - Set and drift

\$\$**VDR,x.x,T,x.x,M,x.x,N,*hh <CR><LF>
1 2 3 4 5 6

1. Direction, degrees (0.0 to 359.9, null)
2. T=True (fixed)
3. Direction, degrees (No use)
4. M=Magnetic (No use)
5. Current speed (0.0 to 99.9)
6. N=Knots (fixed)

VHW - Water speed and heading

\$\$**VHW,x.x,T,x.x,M,x.x,N,x.x,K,*hh <CR><LF>
1 2 3 4 5 6 7 8

1. Heading, degrees (0.0 to 359.9)
2. T=True (fixed, No use)
3. Heading, degrees (No use)
4. M=Magnetic (fixed, No use)
5. Speed, knots (-999.9 to 999.9)
6. N=Knots (fixed)
7. Speed, km/hr (-999.9 to 999.9)
8. K=km/hr (fixed)

VSD - AIS voyage static data

\$\$**VSD,x.x,x.x,x.x,c--c,hhmss.ss,xx,xx,x.x,x.x*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Type of ship and cargo category (No use)
2. Maximum present static draught (No use)
3. Persons on-board (0 to 8191)
4. Destination (No use)
5. Estimated UTC of arrival at destination (No use)
6. Estimated day of arrival at destination (No use)
7. Estimated month of arrival at destination (No use)
8. Navigational status (No use)
9. Regional application flags (No use)

VTG - Course over ground and ground speed

\$**VTG,x.x,T,x.x,M,x.x,N,x.x,K,a,*hh <CR><LF>
 1 2 3 4 5 6 7 8 9

1. Course over ground, degrees (0.0 to 359.9)
2. T=True (fixed)
3. Course over ground, degrees (No use)
4. M=Magnetic (No Use)
5. Speed over ground, knots (0.0 to 999.9)
6. N=Knots (fixed)
7. Speed over ground (0.0 to 999.9)
8. K=km/h (fixed)
9. Mode indicator (A=Autonomous, D=Differential, E=Estimated (dead reckoning), M=Manual input, P=Precision, S=Simulator)

VWR - Wind relative Bearing and Velocity

\$**VWR,x.x,a,x.x,N,x.x,M,x.x,K<CR><LF>
 1 2 3 4 5 6 7 8

1. Measured wind angle relative to the vessel, degrees (0.0 to 180.0)
2. L=Left semicircle, R=Right semicircle
3. Velocity, knots (0.0 to 999.9)
4. Unit (N, fixed)
5. Velocity (0.0 to 999.9)
6. Unit (M, fixed)
7. Velocity, km/h (0.0 to 999.9)
8. Unit (K, fixed)

VWT - True wind speed and angle

\$**VWT,xxx,a,xx.x,N,xx.x,M,xxx.x,K<CR><LF>
 1 2 3 4 5 6 7 8

1. Calculated wind angle, degrees (0.0 to 180.0)
2. L=Left semicircle, R=Right semicircle
3. Calculated with speed, knots (0.0 to 999.9)
4. Unit (N, fixed)
5. Wind speed (0.0 to 999.9)
6. Unit (M, fixed)
7. Wind speed, km/h (0.0 to 999.9)
8. Unit (K, fixed)

WPL - Waypoint location

\$**WPL,IIII.II,a,yyyy.yy,a,c--c*hh<CR><LF>
 1 2 3 4 5

1. Waypoint latitude (0000.0000 to 9000.0000)
2. N/S
3. Waypoint longitude (00000.0000 to 18000.0000)
4. E/W
5. Waypoint identifier (Max. 15 characters)

ZDA - Time and date

\$**ZDA,hhmmss.ss,xx,xx,xxxx,xx,xx,*hh<CR><LF>
 1 2 3 4 5 6

1. UTC (000000.00 to 235959.99, 235960.00 to 235960.99, 240000.00 to 240000.99, 240001.00 to 240001.99)
2. Day (01 to 31)
3. Month (01 to 12)
4. Year (UTC) (0000 to 9999)
5. Local zone, hours (No use)
6. Local zone, minutes (No use)

Output sentences

ABM - AIS addressed binary and safety related message

! **ABM,x,x,x,xxxxxxxx,x,xx,s--s,x,*hh<CR><LF>
 1 2 3 4 5 6 7 8

1. Total number of sentences needed to transfer the message (1 to 9)
2. Message sentence number (1 to 9)
3. Message sequence identifier (0 to 3)
4. The MMSI of destination AIS unit for the ITU-R M.1371 message (9 digits, null)
5. AIS channel for broadcast of the radio message (0 to 3, null)
6. VDL message number (6 or 12, null), see ITU-R M.1371
7. Encapsulated data (1 to 63 bytes)
8. Number of fill-bits (0 to 5)

ACK - Acknowledge alarm

\$ **ACK,xxx,*hh<CR><LF>
 1

1. Unique alarm number (identifier) at alarm source (000 to 999)

AIQ - Query sentence

\$ **AIQ,ccc,*hh<CR><LF>
 1

1. Requested sentence (VSD)

ALC - Cyclic alert list

\$ **ALC,xx,xx,xx,xx,aaa,x.x,x.x,x.x,"",*hh<CR><LF>
 1 2 3 4 5 6 7 8 9

1. Total number of sentences this message (01 to 16)
2. Sentence number (01 to 16)
3. Sequential message identifier (00 to 99)
4. Number of alert entries (0 to 3)
5. Manufacturer mnemonic code (FEC, null) _____
6. Alert identifier (0 to 999999) _____
7. Alert instance (1 to 999999, null) _____
8. Revision counter (1 to 99) _____
9. Additional alert entries (see Note)

Alert entry 1
 See Note

Note: Alert entry 0 - n: Each alert entry consists of

- Manufacturer Identifier (see ALF Manufacturer)
- Alert Identifier (see ALF Alert identifier)
- Alert instance (see ALF instance)
- Revision counter (see ALF revision counter)

Each entry identifies a certain alert with a certain state.

It is not allowed that an alert entry is split between two ALC sentences.

ALF - Alert sentence

\$**ALF,x,x,x,hhmmss.ss,a,a,a,aaa,x,x,x,x,x,c--c,*hh<CR><LF>
 1 2 3 4 5 6 7 8 9 10 11 12 13

1. Total number of ALF sentences this message (1, 2)
2. Sentence number (1, 2)
3. Sequential message identifier (0 to 9)
4. Time of last change (000000.00 to 235959.99, 235960.00 to 235960.99, 240000.00 to 240000.99, 240001.00 to 240001.99, null)
5. Alert category (A=Alert category A, B=Alert category B, null)
6. Alert priority (A=Alarm, W=Warning, C=Caution, null)
7. Alert state (A=active-acknowledged or active, S=active-silenced, O=active-responsibility transferred, U=rectified-unacknowledged, V=active-unacknowledged, N=normal, null)
8. Manufacturer mnemonic code (FEC, null)
9. Alert identifier (0 to 999999)
10. Alert instance (1 to 999999, null)
11. Revision counter (1 to 99)
12. Escalation counter (0 to 9)
13. Alert text (max. 16 characters)

ALR - Set alarm state

\$**ALR,hhmmss.ss,xxx,A,A,c--c,*hh<CR><LF>
 1 2 3 4 5

1. Time of alarm condition change, UTC (000000.00 to 235959.99, 235960.00 to 235960.99, 240000.00 to 240000.99, 240001.00 to 240001.99, null)
2. Unique alarm number (identifier) at alarm source (000 to 999, null)
3. Alarm condition (A=threshold exceeded, V=not exceeded)
4. Alarm acknowledge state (A=acknowledged, V=not acknowledged)
5. Alarm description text (alphanumeric)

ARC - Alert command refused

\$**ARC,hhmmss.ss,aaa,x,x,x,x,c*hh<CR><LF>
 1 2 3 4 5

1. Release time of the alert command refused (000000.00 to 235959.99, 235960.00 to 235960.99, 240000.00 to 240000.99, 240001.00 to 240001.99, null)
2. Used for proprietary alerts, defined by the manufacturer (FEC, null)
3. The alert identifier (0 to 999999)
4. The alert instance (1 to 999999, null)
5. Refused alert command (A=acknowledge, O=responsibility transfer)

BBM - AIS broadcast binary message

\$**BBM,x,x,x,x,xx,s--s,x,*hh<CR><LF>
 1 2 3 4 5 6 7

1. Total number of sentences needed to transfer the message (1 to 9)
2. Sentence number (1 to 9)
3. Sequential message identifier (0 to 9)
4. AIS channel for broadcast of the radio message (0 to 3, null)
5. VDL message number, see ITU-R M.1371 (8 or 14, null)
6. Encapsulated data (1 to 63 bytes)
7. Number of fill-bits (0 to 5)

DDC - Display dimming control

\$**DDC,a,xx,a,a*hh<CR><LF>
 1 2 3 4

1. Display dimming preset (D=Daytime, K=Dusk, N=Nighttime)
2. Brightness percentage (00 to 99)
3. Color palette preset (null)
4. Sentences status flag (R)

APPENDIX 2 DIGITAL INTERFACE

EVE - General event message

\$**EVE,hhmmss.ss,c--c,c--c*hh<CR><LF>
1 2 3

1. Event time (000000.00 to 235959.99, 235960.00 to 235960.99, 240000.00 to 240000.99, 240001.00 to 240001.99, null)
2. Tag code used for identification of source of event (six alphanumeric characters, two English characters, four digits)
3. Event description (OPERATION)

HBT - Heartbeat supervision sentence

\$**HBT,x.x,A,x*hh<CR><LF>
1 2 3

1. Configured repeat interval (60.0(s))
2. Equipment status (A=Normal)
3. Sequential sequence identifier (0 to 9)

OSD- Own ship data

\$**OSD,x.x,A,x.x,a,x.x,a,x.x,x.x,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Heading, degrees true (0.0 to 359.9, null)
2. Heading status (A:data valid, V:data invalid)
3. Vessel course, degrees true (0.0 to 359.9, null)
4. Course reference (B=Bottom tracking log, M=Manually entered, W=Water referenced, R=Radar tracking (of fixed target), P=Positioning system ground reference, null)
5. Vessel speed (0.0 to 99.9, null)
6. Speed reference (B=Bottom tracking log, M=Manually entered, W=Water referenced, R=Radar tracking (of fixed target), P=Positioning system ground reference, null)
7. Vessel set, degrees true, manually entered (0.0 to 359.9, null)
8. Vessel drift (speed), manually entered (0.0 to 19.9, null)
9. Speed units (K=km/h, N=knots, S=statute mile/h, null)

RSD - Radar system data

\$**RSD,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,a*hh <CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13

1. Origin 1 range, from own ship (0.000 to 9.999, 10.00 to 99.99, 100.0 to 999.9, 1000 to 9999, null) (see note)
2. Origin 1 bearing, degrees from 0 (0.0 to 359.9, null) (see note)
3. Variable range marker 1 (VRM1), range (0.000 to 9.999, 10.00 to 99.99, 100.0 to 999.9, null)
4. Bearing line 1 (EBL1), degrees from 0 (0.0 to 359.9, null)
5. Origin 2 range (0.000 to 9.999, 10.00 to 99.99, 100.0 to 999.9, 1000 to 9999, null) (see note)
6. Origin 2 bearing (0.0 to 359.9, null) (see note)
7. VRM2,.9 range (0.000 to 9.999, 10.00 to 99.99, 100.0 to 999.9, null)
8. EBL2, degrees (0.0 to 359.9, null)
9. Cursor range, from own ship (0.000 to 9.999, 10.00 to 99.99, 100.0 to 999.9, null)
10. Cursor bearing, degrees clockwise from 0 (0.0 to 359.9, null)
11. Range scale in use (0.125 to 120.0)
12. Range units (K=km, N=NM, S=statute miles, null)
13. Display rotation (C, H, N, null)
C=Course-up, course-over-ground up, degrees true
H=Head-up, ship's heading(center-line) 0 up
N=North-up, true north is 0 up

NOTE: Origin 1 and origin 2 are located at the stated range and bearing from own ship and provide for two independent sets of variable range markers (VRM) and electronic bearing lines (EBL) originating away from own ship position.

TLB - Target label

\$**TLB,x.x,c--c,x.x,c--c,...,x.x,c--c*hh<CR><LF>
 1 2 3 3

1. Target number "n" reported by the device (1 to 1023)
2. Label assigned to target "n" (TT=000 to 999, AIS= 000000001 to 999999999)
3. Additional label pairs

TLL - Target latitude and longitude

\$**TLL,xx,llll.ll,a,yyyy.yy,a,c--c,hhmmss.ss,a,a*hh<CR><LF>
 1 2 3 4 5 6 7 8 9

1. Target number (null)
2. Target Latitude (0000.0000 to 9000.0000)
3. Target N/S (N/S)
4. Target Longitude (00000.0000 to 18000.0000)
5. Target E/W (E/W)
6. Target name (null)
7. UTC of data (000000.00 to 235959.99, 235960.00 to 235960.99, 240000.00 to 240000.99, 240001.00 to 240001.99, null)
8. Target status (null)
9. Reference target (null)

TTD - Tracked target data

!**TTD,hh,hh,x,s--s,x*hh<CR><LF>
 1 2 3 4 5

1. Total hex number of sentences need to transfer the message (h'01)
2. Hex sentence number (h'01)
3. Sequential message identifier (null)
4. Encapsulated trancked target data (6 bit binary-converted data)
5. Number of fill bits (0 to 5)

TTM - Tracked target message

\$**TTM,xxx,x.x,x.x,a,x.x,x.x,a,x.x,x.x,a,c--c,a,a,hhmmss.ss,a*hh<CR><LF>
 1 2 3 4 5 6 7 8 9 10 11 1213 14 15

1. Target number (000 to 999)
2. Target distance from own ship (0.000 to 99.999)
3. Bearing from own ship,degrees (0.0 to 359.9)
4. True or Relative (T)
5. Target speed (0.00 to 999.99, null)
6. Target course, degrees (0.0 to 359.9, null)
7. T=True or R=Relative
8. Distance of closest point of approach (0.00 to 99.99, null)
9. Time to CPA, min., "-" increasing (-99.99 to 99.99, null)
10. Speed/distance units (N=NM, kn)
11. Target name (null)
12. Target status (L: Lost, tracked target has been lost, Q: Query, target in the process of acquisition, T: Tracking)
13. Reference target (R, null)
14. UTC of data (null)
15. Type of acquisition (A=Automatic, M=Manual)

APPENDIX 2 DIGITAL INTERFACE

VSD - AIS voyage static data

\$**VSD,x.x,x.x,x.x,c--c,hhmmss.ss,xx,xx,x.x,x.x*hh<CR><LF>
1 2 3 4 5 6 7 8 9



1. Type of ship and cargo category (null)
2. Maximum present static draught (0 to 25.5 meters, null)
3. Persons on-board (0 to 8191, null)
4. Destination (1 to 20 characters, null)
5. Estimated UTC of arrival at destination (000000.00 to 235959.99, 246000.00, null)
6. Estimated day of arrival at destination (UTC) (00 to 31, null)
7. Estimated month of arrival at destination (UTC) (00 to 12, null)
8. Navigational status (0 to 15, null)
9. Regional application flags (null)

PACKING LIST

03HL-X-9851 -1 1/1

XN12CF/-HK

A-1

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
アンテナ ANTENNA RADIATOR ASSEMBLY		XN12CF* 001-252-640-00 **	1
工事材料 INSTALLATION MATERIALS			
工事材料 INSTALLATION MATERIALS		CP03-35201 001-249-860-00	1

コード番号末尾の[**]は、選択品の代表コードを表します。
CODE NUMBER ENDING WITH "**" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)



C3616-201-B

PACKING LIST

03HL-X-9852 -0 1/1

XN20CF/-HK

A-2

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
アンテナ ANTENNA RADIATOR ASSEMBLY		XN20CF 001-252-650-00 **	1
工事材料 INSTALLATION MATERIALS			
工事材料 INSTALLATION MATERIALS		CP03-35201 001-249-860-00	1

コード番号末尾の[**]は、選択品の代表コードを表します。
CODE NUMBER ENDING WITH "**" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)



C3616-202-A

PACKING LIST

03HL-X-9853 -0 1/1

XN24CF/-HK

A-3

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
アンテナ ANTENNA RADIATOR ASSEMBLY		XN24CF 001-252-660-00 **	1
工事材料 INSTALLATION MATERIALS			
工事材料 INSTALLATION MATERIALS		CP03-35201 001-249-860-00	1

コード番号末尾の[**]は、選択品の代表コードを表します。
CODE NUMBER ENDING WITH "**" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)



C3616-203-A

PACKING LIST

03FS-X-9856 -0 1/1

XN24AF

A-4

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
アンテナ ANTENNA		XN24AF 008-487-120	1
アンテナ工事材料 ANTENNA INSTALLATION MATERIALS			
工事材料 INSTALLATION MATERIALS		CP03-19101 008-487-130	1

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)