

This program can understand a number of N2K messages. What follows is an explanation of the messages that it understands. First is a list of completely understood messages, as far as I can tell.

What follows is a list of messages that contain fields that have unknown content or size, or even

completely unknown fields. If you happen to know more, please tell me!

_____ Complete PGNs _____

PGN: 59392 - ISO Acknowledgement

Field #1: Control

Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=ACK
Lookup: 1=NAK
Lookup: 2=Access Denied
Lookup: 3=Address Busy

Field #2: Group Function

Bits: 8
Signed: false

Field #3: Reserved - Reserved

Bits: 24
Signed: true

Field #4: PGN - Parameter Group Number of requested information

Bits: 24
Type: Integer
Signed: false

PGN: 59904 - ISO Request

Field #1: PGN

Bits: 24
Type: Integer
Signed: false

PGN: 126992 - System Time

Field #1: SID

Bits: 8
Signed: false

Field #2: Source

Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=GPS
Lookup: 1=GLONASS
Lookup: 2=Radio Station

Lookup: 3=Local Cesium clock
Lookup: 4=Local Rubidium clock
Lookup: 5=Local Crystal clock
Field #3: Reserved - Reserved
Bits: 4
Type: Binary data
Signed: false
Field #4: Date - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false
Field #5: Time
Bits: 32
Type: Time
Signed: false

PGN: 127250 - Vessel Heading

Field #1: SID
Bits: 8
Signed: false
Field #2: Heading
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #3: Deviation
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true
Field #4: Variation
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true
Field #5: Reference
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=True
Lookup: 1=Magnetic

PGN: 127251 - Rate of Turn

Field #1: SID
Bits: 8

Field #2: Rate Signed: false
Bits: 32
Units: deg/s
Resolution: 5.72958e-07
Signed: true

PGN: 127257 - Attitude

Field #1: SID
Bits: 8
Signed: false

Field #2: Yaw
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

Field #3: Pitch
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

Field #4: Roll
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

PGN: 127258 - Magnetic Variation

Field #1: SID
Bits: 8
Signed: false

Field #2: Source
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Manual
Lookup: 1=Automatic Chart
Lookup: 2=Automatic Table
Lookup: 3=Automatic Calculation
Lookup: 4=WMM 2000
Lookup: 5=WMM 2005
Lookup: 6=WMM 2010
Lookup: 7=WMM 2015
Lookup: 8=WMM 2020

Field #3: Reserved - Reserved

Bits: 4
Type: Binary data
Signed: false
Field #4: Age of service - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false
Field #5: Variation
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

PGN: 127488 - Engine Parameters, Rapid Update

Field #1: Engine Instance
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=Single Engine or Dual Engine Port
Lookup: 1=Dual Engine Starboard
Field #2: Engine Speed
Bits: 16
Units: rpm
Type: Integer
Signed: false
Field #3: Engine Boost Pressure
Bits: 16
Units: hPa
Signed: false
Field #4: Engine Tilt/Trim
Bits: 8
Units:
Signed: true

PGN: 127489 - Engine Parameters, Dynamic

Field #1: Engine Instance
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=Single Engine or Dual Engine Port
Lookup: 1=Dual Engine Starboard
Field #2: Oil pressure - hPa
Bits: 16
Signed: false
Field #3: Oil temperature
Bits: 16
Units: K

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                Type: Temperature
                Signed: false
Field #4: Temperature
                Bits: 16
                Units: K
                Type: Temperature
                Signed: false
Field #5: Alternator Potential
                Bits: 16
                Units: V
                Resolution: 0.01
                Signed: false
Field #6: Fuel Rate
                Bits: 16
                Units: L/h
                Resolution: 0.1
                Signed: true
Field #7: Total Engine hours
                Bits: 32
                Units: s
                Signed: false
Field #8: Coolant Pressure
                Bits: 16
                Units: hPa
                Signed: false
Field #9: Fuel Pressure
                Bits: 16
                Signed: false
Field #10: Reserved
                Bits: 8
                Signed: false
Field #11: Discrete Status 1
                Bits: 16
                Type: Integer
                Signed: false
Field #12: Discrete Status 2
                Bits: 16
                Type: Integer
                Signed: false
Field #13: Percent Engine Load
                Bits: 8
                Units: %
                Type: Integer
                Signed: true
Field #14: Percent Engine Torque
                Bits: 8
                Units: %
                Type: Integer
                Signed: true

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Field #1: Engine Instance
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=Single Engine or Dual Engine Port
Lookup: 1=Dual Engine Starboard

Field #2: Transmission Gear
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Forward
Lookup: 1=Neutral
Lookup: 2=Reverse
Lookup: 3=Unknown

Field #3: Reserved
Bits: 6
Signed: false

Field #4: Oil pressure
Bits: 16
Signed: false

Field #5: Oil temperature
Bits: 16
Type: Temperature
Signed: false

Field #6: Discrete Status 1
Bits: 8
Type: Integer
Signed: false

PGN: 127496 - Trip Parameters, Vessel

Field #1: Time to Empty
Bits: 32
Units: s
Resolution: 0.001
Signed: false

Field #2: Distance to Empty
Bits: 32
Units: m
Resolution: 0.01
Signed: false

Field #3: Estimated Fuel Remaining
Bits: 16
Units: L
Signed: false

Field #4: Trip Run Time
Bits: 32
Units: s
Resolution: 0.001
Signed: false

PGN: 127497 - Trip Parameters, Engine

Field #1: Engine Instance
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=Single Engine or Dual Engine Port
Lookup: 1=Dual Engine Starboard

Field #2: Trip Fuel Used
Bits: 16
Units: L
Signed: false

Field #3: Fuel Rate, Average
Bits: 16
Units: L/h
Resolution: 0.1
Signed: true

Field #4: Fuel Rate, Economy
Bits: 16
Units: L/h
Resolution: 0.1
Signed: true

Field #5: Instantaneous Fuel Economy
Bits: 16
Units: L/h
Resolution: 0.1
Signed: true

PGN: 127498 - Engine Parameters, Static

Field #1: Engine Instance
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=Single Engine or Dual Engine Port
Lookup: 1=Dual Engine Starboard

Field #2: Rated Engine Speed
Bits: 16
Signed: false

Field #3: VIN
Bits: 8
Signed: false

Field #4: Software ID
Bits: 16
Signed: false

PGN: 127503 - AC Input Status

The last 10 fields repeat until the data is exhausted.

Field #1: AC Instance
Bits: 8
Signed: false

Field #2: Number of Lines
Bits: 8
Signed: false

Field #3: Line
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Line 1
Lookup: 1=Line 2
Lookup: 2=Line 3
Lookup: 3=Reserved

Field #4: Acceptability
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Bad Level
Lookup: 1=Bad Frequency
Lookup: 2=Being Qualified
Lookup: 3=Good

Field #5: Reserved
Bits: 4
Signed: false

Field #6: Voltage
Bits: 16
Units: V
Resolution: 0.01
Signed: false

Field #7: Current
Bits: 16
Units: A
Resolution: 0.1
Signed: false

Field #8: Frequency
Bits: 16
Units: Hz
Resolution: 0.01
Signed: false

Field #9: Breaker Size
Bits: 16
Units: A
Resolution: 0.1
Signed: false

Field #10: Real Power
Bits: 32
Units: W
Type: Integer
Signed: false

Field #11: Reactive Power
Bits: 32
Units: VAR
Type: Integer
Signed: false
Field #12: Power Factor
Bits: 8
Units: Cos Phi
Resolution: 0.01
Signed: false

PGN: 127504 - AC Output Status

The last 10 fields repeat until the data is exhausted.

Field #1: AC Instance
Bits: 8
Signed: false
Field #2: Number of Lines
Bits: 8
Signed: false
Field #3: Line
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Line 1
Lookup: 1=Line 2
Lookup: 2=Line 3
Field #4: Waveform
Bits: 3
Type: Lookup table
Signed: false
Lookup: 0=Sine Wave
Lookup: 1=Modified Sine Wave
Lookup: 6=Error
Lookup: 7=Data Not Available
Field #5: Reserved
Bits: 3
Signed: false
Field #6: Voltage
Bits: 16
Units: V
Resolution: 0.01
Signed: false
Field #7: Current
Bits: 16
Units: A
Resolution: 0.1
Signed: false
Field #8: Frequency
Bits: 16

Units: Hz
Resolution: 0.01
Signed: false
Field #9: Breaker Size
Bits: 16
Units: A
Resolution: 0.1
Signed: false
Field #10: Real Power
Bits: 32
Units: W
Type: Integer
Signed: false
Field #11: Reactive Power
Bits: 32
Units: VAR
Type: Integer
Signed: false
Field #12: Power Factor
Bits: 8
Units: Cos Phi
Resolution: 0.01
Signed: false

PGN: 127505 - Fluid Level

Field #1: Instance
Bits: 4
Signed: false
Field #2: Type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Fuel
Lookup: 1=Water
Lookup: 2=Gray water
Lookup: 3=Live well
Lookup: 4=Oil
Lookup: 5=Black water
Field #3: Level
Bits: 16
Units: %
Resolution: 0.004
Signed: false
Field #4: Capacity
Bits: 32
Units: L
Resolution: 0.1
Signed: false

PGN: 127508 - Battery Status

Field #1: Battery Instance
Bits: 8
Signed: false

Field #2: Voltage
Bits: 16
Units: V
Resolution: 0.01
Signed: false

Field #3: Current
Bits: 16
Units: A
Resolution: 0.1
Signed: true

Field #4: Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false

Field #5: SID
Bits: 8
Signed: false

PGN: 128259 - Speed

Field #1: SID
Bits: 8
Signed: false

Field #2: Speed Water Referenced
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #3: Speed Ground Referenced
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #4: Speed Water Referenced Type
Bits: 4
Type: Lookup table
Signed: false

PGN: 128267 - Water Depth

Field #1: SID
Bits: 8
Signed: false

Field #2: Depth - Depth below transducer

Bits: 32
Units: m
Resolution: 0.01
Signed: false

Field #3: Offset - Distance between transducer and surface (positive) or keel (negative)

Bits: 16
Units: m
Resolution: 0.001
Signed: true

PGN: 128275 - Distance Log

Field #1: Date - Days since January 1, 1970

Bits: 16
Type: Date
Signed: false

Field #2: Time - Seconds since midnight, range allows for leap seconds

Bits: 32
Type: Time
Signed: false

Field #3: Log - Total cumulative distance

Bits: 32
Units: m
Signed: false

Field #4: Trip Log - Distance since last reset

Bits: 32
Units: m
Signed: false

PGN: 128520 - Tracked Target Data

Field #1: SID

Bits: 8
Signed: false

Field #2: Target ID # - Number of route, waypoint, event, mark, etc.

Bits: 8
Signed: false

Field #3: Track Status

Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Cancelled
Lookup: 1=Acquiring
Lookup: 2=Tracking
Lookup: 3=Lost

Field #4: Reported Target

Bits: 1
Type: Lookup table
Signed: false

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Lookup: 0=No
Lookup: 1=Yes
Field #5: Target Acquisition
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Manual
Lookup: 1=Automatic
Field #6: Bearing Reference
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=True
Lookup: 1=Magnetic
Field #7: Reserved
Bits: 2
Signed: false
Field #8: Bearing
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #9: Distance
Bits: 32
Units: m
Resolution: 0.001
Signed: false
Field #10: Course
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #11: Speed
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false
Field #12: CPA
Bits: 32
Units: m
Resolution: 0.01
Signed: false
Field #13: TCPA - negative = time elapsed since event, positive = time
to go
Bits: 32
Units: s
Resolution: 0.001
Signed: false
Field #14: UTC of Fix
Bits: 32
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Type: Time
Signed: false
Field #15: Name
Bits: 2040
Type: ASCII text
Signed: false

PGN: 129025 - Position, Rapid Update

Field #1: Latitude
Bits: 32
Type: Latitude
Signed: false
Field #2: Longitude
Bits: 32
Type: Longitude
Signed: false

PGN: 129026 - COG & SOG, Rapid Update

Field #1: SID
Bits: 8
Signed: false
Field #2: COG Reference
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=True
Lookup: 1=Magnetic
Field #3: Reserved - Reserved
Bits: 6
Type: Binary data
Signed: false
Field #4: COG
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #5: SOG
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false
Field #6: Reserved - Reserved
Bits: 16
Type: Binary data
Signed: false

PGN: 129029 - GNSS Position Data

The last 3 fields repeat until the data is exhausted.

Field #1: SID

Bits: 8
Signed: false

Field #2: Date - Days since January 1, 1970

Bits: 16
Type: Date
Signed: false

Field #3: Time - Seconds since midnight, range allows for leap seconds,
resolution 100 microseconds

Bits: 32
Type: Time
Signed: false

Field #4: Latitude

Bits: 64
Type: Latitude
Signed: false

Field #5: Longitude - s

Bits: 64
Type: Longitude
Signed: false

Field #6: Altitude

Bits: 64
Units: m
Resolution: 1e-06
Signed: true

Field #7: GNSS type

Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=GPS
Lookup: 1=GLONASS
Lookup: 2=GPS+GLONASS
Lookup: 3=GPS+SBAS/WAAS
Lookup: 4=GPS+SBAS/WAAS+GLONASS
Lookup: 5=Chayka
Lookup: 6=integrated
Lookup: 7=surveyed
Lookup: 8=Galileo

Field #8: Method

Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=no GNSS
Lookup: 1=GNSS fix
Lookup: 2=DGNSS fix
Lookup: 3=Precise GNSS
Lookup: 4=RTK Fixed Integer
Lookup: 5=RTK float

Lookup: 6=Estimated (DR) mode
Lookup: 7=Manual Input
Lookup: 8=Simulate mode

Field #9: Integrity
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=No integrity checking
Lookup: 1=Safe
Lookup: 2=Caution

Field #10: Reserved - Reserved
Bits: 6
Type: Binary data
Signed: false

Field #11: Number of SVs - Number of satellites used in solution
Bits: 8
Signed: false

Field #12: HDOP - Horizontal dilution of precision
Bits: 16
Resolution: 0.01
Signed: false

Field #13: PDOP - Probable dilution of precision
Bits: 16
Resolution: 0.01
Signed: false

Field #14: Geoidal Separation - Geoidal Separation
Bits: 16
Units: m
Resolution: 0.01
Signed: false

Field #15: Reference Stations - Number of reference stations
Bits: 8
Signed: false

Field #16: Reference Station Type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=GPS
Lookup: 1=GLONASS
Lookup: 2=GPS+GLONASS
Lookup: 3=GPS+SBAS/WAAS
Lookup: 4=GPS+SBAS/WAAS+GLONASS
Lookup: 5=Chayka
Lookup: 6=integrated
Lookup: 7=surveyed
Lookup: 8=Galileo

Field #17: Reference Station ID
Bits: 12
Units:
Signed: false

Field #18: Age of DGNSS Corrections
Bits: 16

Units: s
Resolution: 0.01
Signed: false

PGN: 129033 - Time & Date

Field #1: Date - Days since January 1, 1970

Bits: 16
Type: Date
Signed: false

Field #2: Time - Seconds since midnight, range allows for leap seconds,
resolution 100 microseconds

Bits: 32
Type: Time
Signed: false

Field #3: Local Offset - Minutes

Bits: 16
Units: minutes
Type: Integer
Signed: true

PGN: 129038 - AIS Class A Position Report

Field #1: Message ID

Bits: 6
Signed: false

Field #2: Repeat Indicator

Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: User ID

Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #4: Longitude

Bits: 32
Type: Longitude
Signed: false

Field #5: Latitude

Bits: 32
Type: Latitude
Signed: false

Field #6: Position Accuracy

Bits: 1
Type: Lookup table

Signed: false
Lookup: 0=Low
Lookup: 1=High

Field #7: RAIM
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=not in use
Lookup: 1=in use

Field #8: Time Stamp - 0-59 = UTC second when the report was generated
Bits: 6
Type: Lookup table
Signed: false
Lookup: 60=Not available
Lookup: 61=Manual input mode
Lookup: 62=Dead reckoning mode
Lookup: 63=Positioning system is inoperative

Field #9: COG
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #10: SOG
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #11: Communication State - Information used by the TDMA slot allocation algorithm and synchronization information
Bits: 19
Type: Integer
Signed: false

Field #12: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #13: True Heading
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

Field #14: Rate of Turn
Bits: 16
Units: Radians

Type: Angle
Resolution: 0.001
Signed: false
Field #15: Navigational Status
Bits: 8
Signed: false
Field #16: Reserved for Regional Applications
Bits: 8
Signed: false
Field #17: Spare
Bits: 8
Signed: false

PGN: 129039 - AIS Class B Position Report

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false
Field #4: Longitude
Bits: 32
Type: Longitude
Signed: false
Field #5: Latitude
Bits: 32
Type: Latitude
Signed: false
Field #6: Position Accuracy
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Low
Lookup: 1=High
Field #7: RAIM
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=not in use
Lookup: 1=in use

Field #8: Time Stamp - 0-59 = UTC second when the report was generated
Bits: 6
Type: Lookup table
Signed: false
Lookup: 60=Not available
Lookup: 61=Manual input mode
Lookup: 62=Dead reckoning mode
Lookup: 63=Positioning system is inoperative

Field #9: COG
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #10: SOG
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #11: Communication State - Information used by the TDMA slot allocation algorithm and synchronization information
Bits: 19
Type: Integer
Signed: false

Field #12: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #13: True Heading
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

Field #14: Regional Application
Bits: 8
Signed: false

Field #15: Regional Application
Bits: 2
Signed: false

Field #16: Unit type
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=SOTDMA
Lookup: 1=CS

Field #17: Integrated Display - Whether the unit can show messages 12 and 14

Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=No
Lookup: 1=Yes

Field #18: DSC

Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=No
Lookup: 1=Yes

Field #19: Band

Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=top 525 kHz of marine band
Lookup: 1=entire marine band

Field #20: Can handle Msg 22 - Whether device supports message 22

Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=No
Lookup: 1=Yes

Field #21: AIS mode

Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Autonomous
Lookup: 1=Assigned

Field #22: AIS communication state

Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=SOTDMA
Lookup: 1=ITDMA

PGN: 129040 - AIS Class B Extended Position Report

Field #1: Message ID

Bits: 6
Signed: false

Field #2: Repeat Indicator

Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #4: Longitude
Bits: 32
Type: Longitude
Signed: false

Field #5: Latitude
Bits: 32
Type: Latitude
Signed: false

Field #6: Position Accuracy
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Low
Lookup: 1=High

Field #7: AIS RAIM flag
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=not in use
Lookup: 1=in use

Field #8: Time Stamp - 0-59 = UTC second when the report was generated
Bits: 6
Type: Lookup table
Signed: false
Lookup: 60=Not available
Lookup: 61=Manual input mode
Lookup: 62=Dead reckoning mode
Lookup: 63=Positioning system is inoperative

Field #9: COG
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #10: SOG
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #11: Regional Application
Bits: 8
Signed: false

Field #12: Regional Application
Bits: 4
Signed: false

Field #13: Reserved - reserved
Bits: 4

Type: Binary data
Signed: false
Field #14: Type of ship
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=unavailable
Lookup: 20=Wing In Ground
Lookup: 29=Wing In Ground (no other information)
Lookup: 30=Fishing
Lookup: 31=Towing
Lookup: 32=Towing exceeds 200m or wider than 25m
Lookup: 33=Engaged in dredging or underwater operations
Lookup: 34=Engaged in diving operations
Lookup: 35=Engaged in military operations
Lookup: 36=Sailing
Lookup: 37=Pleasure
Lookup: 40=High speed craft
Lookup: 71=High speed craft carrying dangerous goods
Lookup: 72=High speed craft hazard cat B
Lookup: 73=High speed craft hazard cat C
Lookup: 74=High speed craft hazard cat D
Lookup: 79=High speed craft (no additional information)
Lookup: 50=Pilot vessel
Lookup: 51=SAR
Lookup: 52=Tug
Lookup: 53=Port tender
Lookup: 54=Anti-pollution
Lookup: 55=Law enforcement
Lookup: 56=Spare
Lookup: 57=Spare #2
Lookup: 58=Medical
Lookup: 59=RR Resolution No.18
Lookup: 60=Passenger ship
Lookup: 69=Passenger ship (no additional information)
Lookup: 70=Cargo ship
Lookup: 71=Cargo ship carrying dangerous goods
Lookup: 72=Cargo ship hazard cat B
Lookup: 73=Cargo ship hazard cat C
Lookup: 74=Cargo ship hazard cat D
Lookup: 79=Cargo ship (no additional information)
Lookup: 80=Tanker
Lookup: 81=Tanker carrying dangerous goods
Lookup: 82=Tanker hazard cat B
Lookup: 83=Tanker hazard cat C
Lookup: 84=Tanker hazard cat D
Lookup: 89=Tanker (no additional information)
Lookup: 90=Other
Lookup: 91=Other carrying dangerous goods
Lookup: 92=Other hazard cat B
Lookup: 93=Other hazard cat C
Lookup: 94=Other hazard cat D

Lookup: 99=Other (no additional information)
Field #15: True Heading
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true
Field #16: Reserved
Bits: 4
Type: Binary data
Signed: false
Field #17: GNSS type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=GPS
Lookup: 1=GLONASS
Lookup: 2=GPS+GLONASS
Lookup: 3=GPS+SBAS/WAAS
Lookup: 4=GPS+SBAS/WAAS+GLONASS
Lookup: 5=Chayka
Lookup: 6=integrated
Lookup: 7=surveyed
Lookup: 8=Galileo
Field #18: Length
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #19: Beam
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #20: Position reference from Starboard
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #21: Position reference from Bow
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #22: Name - 0=unavailable
Bits: 160
Type: ASCII text
Signed: false
Field #23: DTE
Bits: 1
Type: Lookup table
Signed: false

Lookup: 0=Available
Lookup: 1=Not available
Field #24: AIS mode
Bits: 1
Signed: false
Field #25: Reserved
Bits: 4
Type: Binary data
Signed: false
Field #26: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

PGN: 129045 - User Datum

Field #1: Delta X - Delta shift in X axis from WGS 84
Bits: 32
Units: m
Resolution: 0.01
Signed: true

Field #2: Delta Y - Delta shift in Y axis from WGS 84
Bits: 32
Units: m
Resolution: 0.01
Signed: true

Field #3: Delta Z - Delta shift in Z axis from WGS 84
Bits: 32
Units: m
Resolution: 0.01
Signed: true

Field #4: Rotation in X - Rotational shift in X axis from WGS 84. Rotations presented use the geodetic sign convention. When looking along the positive axis towards the origin, counter-clockwise rotations are positive.

Bits: 32
Type: IEEE Float
Signed: true

Field #5: Rotation in Y - Rotational shift in Y axis from WGS 84. Rotations presented use the geodetic sign convention. When looking along the positive axis towards the origin, counter-clockwise rotations are positive.

Bits: 32
Type: IEEE Float
Signed: true

Field #6: Rotation in Z - Rotational shift in Z axis from WGS 84. Rotations presented use the geodetic sign convention. When looking along the

positive axis towards the origin, counter-clockwise rotations are positive.

Bits: 32
Type: IEEE Float
Signed: true

Field #7: Scale - Scale factor expressed in parts-per-million

Bits: 32
Units: ppm
Type: IEEE Float
Signed: true

Field #8: Ellipsoid Semi-major Axis - Semi-major axis (a) of the User Datum ellipsoid

Bits: 32
Units: m
Resolution: 0.01
Signed: true

Field #9: Ellipsoid Flattening Inverse - Flattening (1/f) of the User Datum ellipsoid

Bits: 32
Type: IEEE Float
Signed: true

Field #10: Datum Name - 4 character code from IHO Publication S-60, Appendices B and C. First three chars are datum ID as per IHO tables. Fourth char is local datum subdivision code.

Bits: 32
Type: ASCII text
Signed: false

PGN: 129284 - Navigation Data

Field #1: SID

Bits: 8
Signed: false

Field #2: Distance to Waypoint

Bits: 32
Units: m
Resolution: 0.01
Signed: false

Field #3: Course/Bearing reference

Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=True
Lookup: 1=Magnetic

Field #4: Perpendicular Crossed

Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=No
Lookup: 1=Yes

Field #5: Arrival Circle Entered

Bits: 2

```

        Type: Lookup table
        Signed: false
        Lookup: 0=No
        Lookup: 1=Yes
Field #6: Calculation Type
        Bits: 2
        Type: Lookup table
        Signed: false
        Lookup: 0=Great Circle
        Lookup: 1=Rhumb Line
Field #7: ETA Time
        Bits: 32
        Type: Time
        Signed: false
Field #8: ETA Date
        Bits: 16
        Type: Date
        Signed: false
Field #9: Bearing, Origin to Destination Waypoint
        Bits: 16
        Units: Radians
        Type: Angle
        Resolution: 0.001
        Signed: false
Field #10: Bearing, Position to Destination Waypoint
        Bits: 16
        Units: Radians
        Type: Angle
        Resolution: 0.001
        Signed: false
Field #11: Origin Waypoint Number
        Bits: 32
        Signed: false
Field #12: Destination Waypoint Number
        Bits: 32
        Signed: false
Field #13: Destination Latitude
        Bits: 32
        Type: Latitude
        Signed: false
Field #14: Destination Longitude
        Bits: 32
        Type: Longitude
        Signed: false
Field #15: Waypoint Closing Velocity
        Bits: 16
        Units: m/s
        Resolution: 0.01
        Signed: true

```

Field #1: SID
Bits: 8
Signed: false
Field #2: Set Reference
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=True
Lookup: 1=Magnetic
Field #3: Reserved - Reserved
Bits: 6
Type: Binary data
Signed: false
Field #4: Set
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #5: Drift
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

PGN: 129301 - Navigation - Route / Time to+from Mark

Field #1: SID
Bits: 8
Signed: false
Field #2: Time to mark - negative = elapsed since event, positive = time to go
Bits: 32
Units: s
Resolution: 0.001
Signed: true
Field #3: Mark Type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Collision
Lookup: 1=Turning point
Lookup: 2=Reference
Lookup: 3=Wheelovert
Lookup: 4=Waypoint
Field #4: Reserved - Reserved
Bits: 4
Type: Binary data
Signed: false
Field #5: Mark ID

Bits: 32
Signed: false

PGN: 129539 - GNSS DOPs

Field #1: SID

Bits: 8
Signed: false

Field #2: Desired Mode

Bits: 3
Type: Lookup table
Signed: false
Lookup: 0=1D
Lookup: 1=2D
Lookup: 2=3D
Lookup: 3=Auto
Lookup: 4=Reserved
Lookup: 5=Reserved
Lookup: 6=Error

Field #3: Actual Mode

Bits: 3
Type: Lookup table
Signed: false
Lookup: 0=1D
Lookup: 1=2D
Lookup: 2=3D
Lookup: 3=Auto
Lookup: 4=Reserved
Lookup: 5=Reserved
Lookup: 6=Error

Field #4: Reserved - Reserved

Bits: 2
Type: Binary data
Signed: false

Field #5: HDOP - Horizontal dilution of precision

Bits: 16
Resolution: 0.01
Signed: false

Field #6: VDOP - Vertical dilution of precision

Bits: 16
Resolution: 0.01
Signed: false

Field #7: TDOP - Time dilution of precision

Bits: 16
Resolution: 0.01
Signed: true

PGN: 129540 - GNSS Sats in View

The last 7 fields repeat until the data is exhausted.

Field #1: SID
Bits: 8
Signed: false

Field #2: Mode
Bits: 2
Type: Lookup table
Signed: false
Lookup: 3=Range residuals used to calculate position

Field #3: Reserved - Reserved
Bits: 6
Type: Binary data
Signed: false

Field #4: Sats in View
Bits: 8
Signed: false

Field #5: PRN
Bits: 8
Signed: false

Field #6: Elevation
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

Field #7: Azimuth
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

Field #8: SNR
Bits: 16
Units: dB
Resolution: 0.01
Signed: false

Field #9: Range residuals
Bits: 32
Signed: true

Field #10: Status
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Not tracked
Lookup: 1=Tracked
Lookup: 2=Used
Lookup: 3=Not tracked+Diff
Lookup: 4=Tracked+Diff
Lookup: 5=Used+Diff

Field #11: Reserved - Reserved
Bits: 4
Type: Binary data

Signed: false

PGN: 129794 - AIS Class A Static and Voyage Related Data

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #4: IMO number - 0=unavailable
Bits: 32
Type: Integer
Signed: false

Field #5: Callsign - 0=unavailable
Bits: 56
Type: ASCII text
Signed: false

Field #6: Name - 0=unavailable
Bits: 160
Type: ASCII text
Signed: false

Field #7: Type of ship
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=unavailable
Lookup: 20=Wing In Ground
Lookup: 29=Wing In Ground (no other information)
Lookup: 30=Fishing
Lookup: 31=Towing
Lookup: 32=Towing exceeds 200m or wider than 25m
Lookup: 33=Engaged in dredging or underwater operations
Lookup: 34=Engaged in diving operations
Lookup: 35=Engaged in military operations
Lookup: 36=Sailing
Lookup: 37=Pleasure
Lookup: 40=High speed craft
Lookup: 71=High speed craft carrying dangerous goods
Lookup: 72=High speed craft hazard cat B
Lookup: 73=High speed craft hazard cat C

Lookup: 74=High speed craft hazard cat D
Lookup: 79=High speed craft (no additional information)
Lookup: 50=Pilot vessel
Lookup: 51=SAR
Lookup: 52=Tug
Lookup: 53=Port tender
Lookup: 54=Anti-pollution
Lookup: 55=Law enforcement
Lookup: 56=Spare
Lookup: 57=Spare #2
Lookup: 58=Medical
Lookup: 59=RR Resolution No.18
Lookup: 60=Passenger ship
Lookup: 69=Passenger ship (no additional information)
Lookup: 70=Cargo ship
Lookup: 71=Cargo ship carrying dangerous goods
Lookup: 72=Cargo ship hazard cat B
Lookup: 73=Cargo ship hazard cat C
Lookup: 74=Cargo ship hazard cat D
Lookup: 79=Cargo ship (no additional information)
Lookup: 80=Tanker
Lookup: 81=Tanker carrying dangerous goods
Lookup: 82=Tanker hazard cat B
Lookup: 83=Tanker hazard cat C
Lookup: 84=Tanker hazard cat D
Lookup: 89=Tanker (no additional information)
Lookup: 90=Other
Lookup: 91=Other carrying dangerous goods
Lookup: 92=Other hazard cat B
Lookup: 93=Other hazard cat C
Lookup: 94=Other hazard cat D
Lookup: 99=Other (no additional information)

Field #8: Length

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #9: Beam

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #10: Position reference from Starboard

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #11: Position reference from Bow

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #12: ETA date
Bits: 16
Type: Date
Signed: false

Field #13: ETA time
Bits: 32
Type: Time
Signed: false

Field #14: Draft
Bits: 16
Units: m
Resolution: 0.01
Signed: false

Field #15: Destination - 0=unavailable
Bits: 160
Type: ASCII text
Signed: false

Field #16: AIS version indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=ITU-R M.1371-1
Lookup: 1=ITU-R M.1371-3
Lookup: 2=Future
Lookup: 3=Future

Field #17: GNSS type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=GPS
Lookup: 1=GLONASS
Lookup: 2=GPS+GLONASS
Lookup: 3=GPS+SBAS/WAAS
Lookup: 4=GPS+SBAS/WAAS+GLONASS
Lookup: 5=Chayka
Lookup: 6=integrated
Lookup: 7=surveyed
Lookup: 8=Galileo

Field #18: DTE
Bits: 1
Signed: false

Field #19: Reserved - reserved
Bits: 1
Type: Binary data
Signed: false

Field #20: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission

Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

PGN: 129795 - AIS Addressed Binary Message

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: Source ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #4: Reserved - reserved
Bits: 1
Type: Binary data
Signed: false

Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #6: Sequence Number
Bits: 2
Signed: false

Field #7: Destination ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #8: Reserved - reserved
Bits: 6
Type: Binary data
Signed: false

Field #9: Retransmit flag
Bits: 1
Signed: false

Field #10: Reserved - reserved
Bits: 1
Type: Binary data
Signed: false
Field #11: Number of Bits in Binary Data Field
Bits: 16
Type: Integer
Signed: false
Field #12: Binary Data
Bits: 64
Type: Binary data
Signed: false

PGN: 129796 - AIS Acknowledge

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: Source ID
Bits: 32
Units: MMSI
Signed: false
Field #4: Reserved - reserved
Bits: 1
Type: Binary data
Signed: false
Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved
Field #6: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #7: Destination ID #1
Bits: 32
Signed: false

Field #8: Sequence Number for ID 1 - reserved
Bits: 2
Type: Binary data
Signed: false

Field #9: Reserved - reserved
Bits: 6
Type: Binary data
Signed: false

Field #10: Sequence Number for ID n - reserved
Bits: 2
Type: Binary data
Signed: false

PGN: 129797 - AIS Binary Broadcast Message

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: Source ID
Bits: 32
Signed: false

Field #4: Reserved - reserved
Bits: 1
Type: Binary data
Signed: false

Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #6: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #7: Number of Bits in Binary Data Field
Bits: 16
Signed: false

Field #8: Binary Data

Bits: 2040
Type: Binary data
Signed: false

PGN: 129801 - AIS Addressed Safety Related Message

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: Source ID
Bits: 32
Units: MMSI
Signed: false

Field #4: Reserved - reserved
Bits: 1
Type: Binary data
Signed: false

Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #6: Sequence Number
Bits: 2
Signed: false

Field #7: Destination ID
Bits: 32
Units: MMSI
Signed: false

Field #8: Reserved - reserved
Bits: 6
Type: Binary data
Signed: false

Field #9: Retransmit flag
Bits: 1
Signed: false

Field #10: Reserved - reserved
Bits: 1

Type: Binary data
 Signed: false
Field #11: Safety Related Text
 Bits: 2040
 Type: ASCII text
 Signed: false

PGN: 129804 - AIS Assignment Mode Command

The last 3 fields repeat until the data is exhausted.

Field #1: Message ID
 Bits: 6
 Signed: false
Field #2: Repeat Indicator
 Bits: 2
 Type: Lookup table
 Signed: false
 Lookup: 0=Initial
 Lookup: 1=First retransmission
 Lookup: 2=Second retransmission
 Lookup: 3=Final retransmission
Field #3: Source ID
 Bits: 32
 Units: MMSI
 Type: Integer
 Signed: false
Field #4: Reserved - reserved
 Bits: 1
 Type: Binary data
 Signed: false
Field #5: AIS Transceiver information
 Bits: 5
 Type: Lookup table
 Signed: false
 Lookup: 0=Channel A VDL reception
 Lookup: 1=Channel B VDL reception
 Lookup: 2=Channel A VDL transmission
 Lookup: 3=Channel B VDL transmission
 Lookup: 4=Own information not broadcast
 Lookup: 5=Reserved
Field #6: Reserved - reserved
 Bits: 2
 Type: Binary data
 Signed: false
Field #7: Destination ID
 Bits: 32
 Units: MMSI
 Type: Integer
 Signed: false
Field #8: Offset

Bits: 16
Type: Integer
Signed: false
Field #9: Increment
Bits: 16
Type: Integer
Signed: false

PGN: 130306 - Wind Data

Field #1: SID
Bits: 8
Signed: false
Field #2: Wind Speed
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false
Field #3: Wind Angle
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #4: Reference
Bits: 3
Type: Lookup table
Signed: false
Lookup: 0=True (referenced to North)
Lookup: 1=Magnetic
Lookup: 2=Apparent
Lookup: 3=True (boat referenced)

PGN: 130310 - Environmental Parameters

Field #1: SID
Bits: 8
Signed: false
Field #2: Water Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #3: Outside Ambient Air Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #4: Atmospheric Pressure
Bits: 16

Units: hPa
Signed: false

PGN: 130311 - Environmental Parameters

Field #1: SID
Bits: 8
Signed: false

Field #2: Temperature Instance
Bits: 6
Type: Lookup table
Signed: false
Lookup: 0=Sea
Lookup: 1=Outside
Lookup: 2=Inside
Lookup: 3=Engine room
Lookup: 4=Main Cabin

Field #3: Humidity Instance
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Inside
Lookup: 1=Outside

Field #4: Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false

Field #5: Humidity
Bits: 16
Units: %
Resolution: 0.004
Signed: true

Field #6: Atmospheric Pressure
Bits: 16
Units: hPa
Signed: false

PGN: 130320 - Tide Station Data

Field #1: Mode
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Autonomous
Lookup: 1=Differential enhanced
Lookup: 2=Estimated
Lookup: 3=Simulator
Lookup: 4=Manual

Field #2: Tide Tendency

Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Falling
Lookup: 1=Rising

Field #3: Reserved
Bits: 2
Type: Integer
Signed: false

Field #4: Measurement Date - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false

Field #5: Measurement Time
Bits: 32
Type: Time
Signed: false

Field #6: Station Latitude
Bits: 32
Type: Latitude
Signed: false

Field #7: Station Longitude
Bits: 32
Type: Longitude
Signed: false

Field #8: Tide Level - Relative to MLLW
Bits: 16
Units: m
Resolution: 0.001
Signed: true

Field #9: Tide Level standard deviation
Bits: 16
Units: m
Resolution: 0.01
Signed: false

Field #10: Station ID
Bits: 16
Type: String with start/stop byte
Signed: false

Field #11: Station Name
Bits: 16
Type: String with start/stop byte
Signed: false

PGN: 130321 - Salinity Station Data

Field #1: Mode
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Autonomous

```

Lookup: 1=Differential enhanced
Lookup: 2=Estimated
Lookup: 3=Simulator
Lookup: 4=Manual
Field #2: Reserved
Bits: 4
Type: Integer
Signed: false
Field #3: Measurement Date - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false
Field #4: Measurement Time
Bits: 32
Type: Time
Signed: false
Field #5: Station Latitude
Bits: 32
Type: Latitude
Signed: false
Field #6: Station Longitude
Bits: 32
Type: Longitude
Signed: false
Field #7: Salinity - The average Salinity of ocean water is about 35 grams
of salts per kilogram of sea water (g/kg), usually written as 35 ppt which
is read as 35 parts per thousand.
Bits: 32
Units: ppt
Type: IEEE Float
Signed: true
Field #8: Water Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #9: Station ID
Bits: 16
Type: String with start/stop byte
Signed: false
Field #10: Station Name
Bits: 16
Type: String with start/stop byte
Signed: false

```

PGN: 130576 - Small Craft Status

```

Field #1: Port trim tab
Bits: 8
Signed: true
Field #2: Starboard trim tab

```

Bits: 8
Signed: true

PGN: 130577 - Direction Data

Field #1: Data Mode
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Autonomous
Lookup: 1=Differential enhanced
Lookup: 2=Estimated
Lookup: 3=Simulator
Lookup: 4=Manual

Field #2: COG Reference
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=True
Lookup: 1=Magnetic

Field #3: Reserved - Reserved
Bits: 2
Type: Binary data
Signed: false

Field #4: SID
Bits: 8
Signed: false

Field #5: COG
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #6: SOG
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #7: Heading
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #8: Speed through Water
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #9: Set
Bits: 16

Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #10: Drift

Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

PGN: 130578 - Vessel Speed Components

Field #1: Longitudinal Speed, Water-referenced

Bits: 16
Units: m/s
Resolution: 0.001
Signed: true

Field #2: Transverse Speed, Water-referenced

Bits: 16
Units: m/s
Resolution: 0.001
Signed: true

Field #3: Longitudinal Speed, Ground-referenced

Bits: 16
Units: m/s
Resolution: 0.001
Signed: true

Field #4: Transverse Speed, Ground-referenced

Bits: 16
Units: m/s
Resolution: 0.001
Signed: true

Field #5: Stern Speed, Water-referenced

Bits: 16
Units: m/s
Resolution: 0.001
Signed: true

Field #6: Stern Speed, Ground-referenced

Bits: 16
Units: m/s
Resolution: 0.001
Signed: true

_____ Incomplete PGNs _____

PGN: 60928 - ISO Address Claim

Field #1: Unique Number - ISO Identity Number

Bits: 21
Type: Binary data

Signed: false
Field #2: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false
Field #3: Device Instance Lower - ISO ECU Instance
Bits: 4
Signed: false
Field #4: Device Instance Upper - ISO Function Instance
Bits: 4
Signed: false
Field #5: Device Function - ISO Function
Bits: 8
Signed: false
Field #6: Reserved
Bits: 1
Type: Binary data
Signed: false
Field #7: Device Class
Bits: 7
Type: Lookup table
Signed: false
Lookup: 0=Reserved for 2000 Use
Lookup: 10=System tools
Lookup: 20=Safety systems
Lookup: 25=Internetwork device
Lookup: 30=Power management and lighting systems
Lookup: 40=Steering systems
Lookup: 50=Propulsion systems
Lookup: 60=Navigation systems
Lookup: 70=Communication systems
Lookup: 80=Instrumentation/general systems
Lookup: 90=Environmental (HVAC) systems
Lookup: 100=Deck
Lookup: cargo and fishing equipment systems
Field #8: System Instance - ISO Device Class Instance
Bits: 4
Signed: false
Field #9: Industry Group
Bits: 5
Signed: false
Field #10: Reserved - ISO Self Configurable
Bits: 3
Signed: false

PGN: 61184 - ISO: Manu. Proprietary single-frame addressed

PGN: 65240 - ISO Commanded Address

Field #1: Unique Number - ISO Identity Number
 Bits: 21
 Type: Binary data
 Signed: false

Field #2: Manufacturer Code
 Bits: 11
 Signed: false

Field #3: Device Instance Lower - ISO ECU Instance
 Bits: 4
 Signed: false

Field #4: Device Instance Upper - ISO Function Instance
 Bits: 4
 Signed: false

Field #5: Device Function - ISO Function
 Bits: 8
 Signed: false

Field #6: Reserved
 Bits: 1
 Signed: false

Field #7: Device Class
 Bits: 7
 Type: Lookup table
 Signed: false
 Lookup: 0=Reserved for 2000 Use
 Lookup: 10=System tools
 Lookup: 20=Safety systems
 Lookup: 25=Internetwork device
 Lookup: 30=Power management and lighting systems
 Lookup: 40=Steering systems
 Lookup: 50=Propulsion systems
 Lookup: 60=Navigation systems
 Lookup: 70=Communication systems
 Lookup: 80=Instrumentation/general systems
 Lookup: 90=Environmental (HVAC) systems
 Lookup: 100=Deck
 Lookup: cargo and fishing equipment systems

Field #8: System Instance - ISO Device Class Instance
 Bits: 4
 Signed: false

Field #9: Industry Group
 Bits: 5
 Signed: false

Field #10: Reserved - ISO Self Configurable
 Bits: 3
 Signed: false

Field #11: New Source Address
 Bits: 8
 Signed: false

PGN: 65280 - ISO: Manu. Proprietary single-frame non-addressed

PGN: 65285 - Lowrance: Temperature

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false

Field #2: Industry Code
Bits: 5
Signed: false

Field #3: Temperature Instance
Bits: 4
Signed: false

Field #4: Temperature Source
Bits: 4
Signed: false

Field #5: Actual Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false

PGN: 65410 - Airmar: Device Information

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false

Field #2: Industry Code
Bits: 5
Signed: false

Field #3: SID
Bits: 8
Signed: false

Field #4: Internal Device Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false

Field #5: Supply Voltage
Bits: 16
Units: V
Resolution: 0.01
Signed: false

PGN: 126208 - NMEA - Command/Request/Acknowledge group function

The last 2 fields repeat until the data is exhausted.

Field #1: Function Code
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=Request
Lookup: 1=Command
Lookup: 2=Acknowledge

Field #2: PGN - Commanded or requested PGN
Bits: 24
Type: Integer
Signed: false

Field #3: Priority - 8 = leave priority unchanged
Bits: 4
Signed: false

Field #4: Unused
Bits: 4
Signed: false

Field #5: # of Commanded Parameters - How many parameter pairs will follow
Bits: 8
Signed: false

Field #6: Parameter Index - First parameter index
Bits: 8
Type: Integer
Signed: false

Field #7: Parameter Value - First parameter new value
Bits: 16
Type: Integer
Signed: false

PGN: 126270 - Maretron: Slave Response

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false

Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine

Field #3: Product code - 0x1b2=SSC200
Bits: 16
Signed: false

Field #4: Software code
Bits: 16
Signed: false

Field #5: Command - 0x50=Deviation calibration result
Bits: 8
Signed: false

Field #6: Status
Bits: 8

Signed: false

PGN: 126464 - PGN List (Transmit and Receive)

The last 1 fields repeat until the data is exhausted.

Field #1: Function Code - Transmit or receive PGN Group Function Code

Bits: 8

Type: Lookup table

Signed: false

Lookup: 0=Transmit PGN list

Lookup: 1=Receive PGN list

Field #2: PGN

Bits: 24

Type: Integer

Signed: false

PGN: 126720 - Manufacturer Proprietary: Addressable Multi-Frame

Field #1: Manufacturer Code

Bits: 11

Type: Manufacturer code

Signed: false

Field #2: Industry Code

Bits: 5

Type: Lookup table

Signed: false

Lookup: 19=Marine

PGN: 126996 - Product Information

Field #1: NMEA 2000 Version

Bits: 16

Signed: false

Field #2: NMEA Manufacturer's Product Code

Bits: 16

Signed: false

Field #3: Manufacturer's Model ID

Bits: 256

Type: ASCII text

Signed: false

Field #4: Manufacturer's Software Version Code

Bits: 320

Type: ASCII text

Signed: false

Field #5: Manufacturer's Model Version

Bits: 192

Type: ASCII text

Signed: false

Field #6: Manufacturer's Model Serial Code
Bits: 256
Type: ASCII text
Signed: false
Field #7: NMEA 2000 Certification Level
Bits: 8
Signed: false
Field #8: Load Equivalency
Bits: 8
Signed: false

PGN: 126998 - Configuration Information

Field #1: Station ID
Bits: 16
Signed: false
Field #2: Station Name
Bits: 16
Signed: false
Field #3: A
Bits: 16
Signed: false
Field #4: Manufacturer
Bits: 288
Type: ASCII text
Signed: false
Field #5: Installation Description #1
Bits: 16
Signed: false
Field #6: Installation Description #2
Bits: 16
Signed: false

PGN: 127237 - Heading/Track control

Field #1: Rudder Limit Exceeded
Bits: 1
Signed: false
Field #2: Off-Heading Limit Exceeded
Bits: 1
Signed: false
Field #3: Off-Track Limit Exceeded
Bits: 1
Signed: false
Field #4: Override
Bits: 1
Signed: false
Field #5: Steering Mode
Bits: 4
Signed: false

Field #6: Turn Mode
Bits: 4
Signed: false

Field #7: Heading Reference
Bits: 3
Signed: false

Field #8: Reserved
Bits: 1
Signed: false

Field #9: Commanded Rudder Direction
Bits: 2
Signed: false

Field #10: Commanded Rudder Angle
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #11: Heading-To-Steer (Course)
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #12: Track
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #13: Rudder Limit
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #14: Off-Heading Limit
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #15: Radius of Turn Order
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #16: Rate of Turn Order
Bits: 16
Units: Radians
Type: Angle

Resolution: 0.001
Signed: false
Field #17: Off-Track Limit
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #18: Vessel Heading
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

PGN: 127245 - Rudder

Field #1: Instance
Bits: 8
Signed: false
Field #2: Direction Order
Bits: 2
Signed: false
Field #3: Reserved - Reserved
Bits: 6
Type: Binary data
Signed: false
Field #4: Angle Order
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true
Field #5: Position
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: true

PGN: 127501 - Binary Switch Bank Status

The last 1 fields repeat until the data is exhausted.

Field #1: Indicator Bank Instance
Bits: 8
Signed: false
Field #2: Indicator
Bits: 2
Type: Lookup table

Signed: false
Lookup: 0=Off
Lookup: 1=On

PGN: 127502 - Switch Bank Control

The last 1 fields repeat until the data is exhausted.

Field #1: Switch Bank Instance
Bits: 8
Signed: false
Field #2: Switch
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Off
Lookup: 1=On

PGN: 127506 - DC Detailed Status

Field #1: SID
Bits: 8
Signed: false
Field #2: DC Instance
Bits: 8
Signed: false
Field #3: DC Type
Bits: 8
Signed: false
Field #4: State of Charge
Bits: 8
Signed: false
Field #5: State of Health
Bits: 8
Signed: false
Field #6: Time Remaining
Bits: 16
Signed: false
Field #7: Ripple Voltage
Bits: 16
Units: V
Resolution: 0.01
Signed: false

PGN: 127507 - Charger Status

Field #1: Charger Instance
Bits: 8
Signed: false

Field #2: Battery Instance
Bits: 8
Signed: false
Field #3: Operating State
Bits: 8
Signed: false
Field #4: Charge Mode
Bits: 8
Signed: false
Field #5: Charger Enable/Disable
Bits: 2
Signed: false
Field #6: Equalization Pending
Bits: 2
Signed: false
Field #7: Reserved
Bits: 4
Signed: false
Field #8: Equalization Time Remaining
Bits: 16
Signed: false

PGN: 127509 - Inverter Status

Field #1: Inverter Instance
Bits: 8
Signed: false
Field #2: AC Instance
Bits: 8
Signed: false
Field #3: DC Instance
Bits: 8
Signed: false
Field #4: Operating State
Bits: 8
Signed: false
Field #5: Inverter Enable/Disable
Bits: 2
Signed: false
Field #6: Reserved
Bits: 14
Signed: false

PGN: 127510 - Charger Configuration Status

Field #1: Charger Instance
Bits: 8
Signed: false
Field #2: Battery Instance
Bits: 8

Signed: false
Field #3: Charger Enable/Disable
Bits: 2
Signed: false
Field #4: Reserved
Bits: 6
Signed: false
Field #5: Charge Current Limit
Bits: 16
Units: A
Resolution: 0.1
Signed: false
Field #6: Charging Algorithm
Bits: 8
Signed: false
Field #7: Charger Mode
Bits: 8
Signed: false
Field #8: Estimated Temperature - When no sensor present
Bits: 16
Type: Temperature
Signed: false
Field #9: Equalize One Time Enable/Disable
Bits: 4
Signed: false
Field #10: Over Charge Enable/Disable
Bits: 4
Signed: false
Field #11: Equalize Time
Bits: 16
Signed: false

PGN: 127511 - Inverter Configuration Status

Field #1: Inverter Instance
Bits: 8
Signed: false
Field #2: AC Instance
Bits: 8
Signed: false
Field #3: DC Instance
Bits: 8
Signed: false
Field #4: Inverter Enable/Disable
Bits: 2
Signed: false
Field #5: Inverter Mode
Bits: 8
Signed: false
Field #6: Load Sense Enable/Disable
Bits: 8

Signed: false
Field #7: Load Sense Power Threshold
Bits: 8
Signed: false
Field #8: Load Sense Interval
Bits: 8
Signed: false

PGN: 127512 - AGS Configuration Status

Field #1: AGS Instance
Bits: 8
Signed: false
Field #2: Generator Instance
Bits: 8
Signed: false
Field #3: AGS Mode
Bits: 8
Signed: false

PGN: 127513 - Battery Configuration Status

Field #1: Battery Instance
Bits: 8
Signed: false
Field #2: Battery Type
Bits: 8
Signed: false
Field #3: Supports Equalization
Bits: 2
Signed: false
Field #4: Reserved
Bits: 6
Signed: false
Field #5: Nominal Voltage
Bits: 16
Units: V
Resolution: 0.01
Signed: false
Field #6: Chemistry
Bits: 8
Signed: false
Field #7: Capacity
Bits: 16
Signed: false
Field #8: Temperature Coefficient
Bits: 16
Signed: false
Field #9: Peukert Exponent
Bits: 16

Signed: false
Field #10: Charge Efficiency Factor
Bits: 16
Signed: false

PGN: 127514 - AGS Status

Field #1: AGS Instance
Bits: 8
Signed: false
Field #2: Generator Instance
Bits: 8
Signed: false
Field #3: AGS Operating State
Bits: 8
Signed: false
Field #4: Generator State
Bits: 8
Signed: false
Field #5: Generator On Reason
Bits: 8
Signed: false
Field #6: Generator Off Reason
Bits: 8
Signed: false

PGN: 129027 - Position Delta, Rapid Update

Field #1: SID
Bits: 8
Signed: false
Field #2: Time Delta
Bits: 16
Signed: false
Field #3: Latitude Delta
Bits: 16
Signed: true
Field #4: Longitude Delta
Bits: 16
Signed: true

PGN: 129028 - Altitude Delta, Rapid Update

Field #1: SID
Bits: 8
Signed: false
Field #2: Time Delta
Bits: 16
Signed: true

Field #3: GNSS Quality
Bits: 2
Signed: false
Field #4: Direction
Bits: 2
Signed: false
Field #5: Reserved - Reserved
Bits: 4
Type: Binary data
Signed: false
Field #6: Course Over Ground
Bits: 32
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #7: Altitude Delta
Bits: 16
Signed: true

PGN: 129044 - Datum

Field #1: Local Datum - defined in IHO Publication S-60
Bits: 8
Signed: false
Field #2: Delta Latitude
Bits: 32
Type: Latitude
Signed: false
Field #3: Delta Longitude
Bits: 32
Type: Longitude
Signed: false
Field #4: Delta Altitude
Bits: 64
Units: m
Resolution: 1e-06
Signed: true
Field #5: Reference Datum - defined in IHO Publication S-60
Bits: 8
Signed: false

PGN: 129283 - Cross Track Error

Field #1: SID
Bits: 8
Signed: false
Field #2: XTE mode
Bits: 4
Type: Lookup table

Signed: false
Lookup: 0=Autonomous
Lookup: 1=Differential enhanced
Lookup: 2=Estimated
Lookup: 3=Simulator
Lookup: 4=Manual
Field #3: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #4: Navigation Terminated
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=No
Lookup: 1=Yes
Field #5: XTE
Bits: 32
Units: m
Resolution: 0.01
Signed: true

PGN: 129285 - Navigation - Route/WP Information

The last 4 fields repeat until the data is exhausted.

Field #1: Start RPS#
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Database ID
Bits: 8
Signed: false
Field #4: Route ID
Bits: 8
Signed: false
Field #5: Navigation direction in route
Bits: 2
Signed: false
Field #6: Supplementary Route/WP data available
Bits: 2
Signed: false
Field #7: Reserved - Reserved
Bits: 4
Type: Binary data
Signed: false
Field #8: Route Name
Bits: 64
Type: ASCII text

Field #9: Reserved - Reserved
Signed: false
Bits: 8
Type: Binary data
Signed: false

Field #10: WP ID
Bits: 32
Signed: false

Field #11: WP Name
Bits: 64
Type: ASCII text
Signed: false

Field #12: WP Latitude
Bits: 32
Type: Latitude
Signed: false

Field #13: WP Longitude
Bits: 32
Type: Longitude
Signed: false

PGN: 129302 - Bearing and Distance between two Marks

Field #1: SID
Bits: 8
Signed: false

Field #2: Bearing Reference
Bits: 4
Type: Lookup table
Signed: false

Field #3: Calculation Type
Bits: 2
Type: Lookup table
Signed: false

Field #4: Reserved - Reserved
Bits: 2
Type: Binary data
Signed: false

Field #5: Bearing, Origin to Destination
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #6: Distance
Bits: 32
Units: m
Resolution: 0.01
Signed: false

Field #7: Origin Mark Type
Bits: 4

Type: Lookup table
 Signed: false
Field #8: Destination Mark Type
 Bits: 4
 Type: Lookup table
 Signed: false
Field #9: Origin Mark ID
 Bits: 32
 Signed: false
Field #10: Destination Mark ID
 Bits: 32
 Signed: false

PGN: 129538 - GNSS Control Status

Field #1: SV Elevation Mask - Will not use SV below this elevation
 Bits: 16
 Signed: false
Field #2: PDOP Mask - Will not report position above this PDOP
 Bits: 16
 Resolution: 0.01
 Signed: false
Field #3: PDOP Switch - Will report 2D position above this PDOP
 Bits: 16
 Resolution: 0.01
 Signed: false
Field #4: SNR Mask - Will not use SV below this SNR
 Bits: 16
 Resolution: 0.01
 Signed: false
Field #5: GNSS Mode (desired)
 Bits: 3
 Type: Lookup table
 Signed: false
 Lookup: 0=1D
 Lookup: 1=2D
 Lookup: 2=3D
 Lookup: 3=Auto
 Lookup: 4=Reserved
 Lookup: 5=Reserved
 Lookup: 6=Error
Field #6: DGNSS Mode (desired)
 Bits: 3
 Type: Lookup table
 Signed: false
 Lookup: 0=no SBAS
 Lookup: 1=SBAS
 Lookup: 3=SBAS
Field #7: Position/Velocity Filter
 Bits: 2
 Signed: false

Field #8: Max Correction Age
Bits: 16
Signed: false
Field #9: Antenna Altitude for 2D Mode
Bits: 16
Units: m
Resolution: 0.01
Signed: false
Field #10: Use Antenna Altitude for 2D Mode
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=use last 3D height
Lookup: 1=Use antenna altitude

PGN: 129541 - GPS Almanac Data

Field #1: PRN
Bits: 8
Signed: false
Field #2: GPS Week number
Bits: 8
Signed: false
Field #3: SV Health Bits
Bits: 8
Signed: false
Field #4: Eccentricity
Bits: 8
Signed: false
Field #5: Almanac Reference Time
Bits: 8
Signed: false
Field #6: Inclination Angle
Bits: 8
Signed: false
Field #7: Right of Right Ascension
Bits: 8
Signed: false
Field #8: Root of Semi-major Axis
Bits: 8
Signed: false
Field #9: Argument of Perigee
Bits: 8
Signed: false
Field #10: Longitude of Ascension Node
Bits: 8
Signed: false
Field #11: Mean Anomaly
Bits: 8
Signed: false
Field #12: Clock Parameter 1

Bits: 8
Signed: false
Field #13: Clock Parameter 2
Bits: 8
Signed: false

PGN: 129542 - GNSS Pseudorange Noise Statistics

Field #1: SID
Bits: 8
Signed: false
Field #2: RMS of Position Uncertainty
Bits: 16
Signed: false
Field #3: STD of Major axis
Bits: 8
Signed: false
Field #4: STD of Minor axis
Bits: 8
Signed: false
Field #5: Orientation of Major axis
Bits: 8
Signed: false
Field #6: STD of Lat Error
Bits: 8
Signed: false
Field #7: STD of Lon Error
Bits: 8
Signed: false
Field #8: STD of Alt Error
Bits: 8
Signed: false

PGN: 129545 - GNSS RAIM Output

Field #1: SID
Bits: 8
Signed: false
Field #2: Integrity flag
Bits: 4
Signed: false
Field #3: Reserved - Reserved
Bits: 4
Type: Binary data
Signed: false
Field #4: Latitude expected error
Bits: 8
Signed: false
Field #5: Longitude expected error
Bits: 8

Signed: false
Field #6: Altitude expected error
Bits: 8
Signed: false
Field #7: SV ID of most likely failed sat
Bits: 8
Signed: false
Field #8: Probability of missed detection
Bits: 8
Signed: false
Field #9: Estimate of pseudorange bias
Bits: 8
Signed: false
Field #10: Std Deviation of bias
Bits: 8
Signed: false

PGN: 129546 - GNSS RAIM Settings

Field #1: Radial Position Error Maximum Threshold
Bits: 8
Signed: false
Field #2: Probability of False Alarm
Bits: 8
Signed: false
Field #3: Probability of Missed Detection
Bits: 8
Signed: false
Field #4: Pseudorange Residual Filtering Time Constant
Bits: 8
Signed: false

PGN: 129547 - GNSS Pseudorange Error Statistics

Field #1: SID
Bits: 8
Signed: false
Field #2: RMS Std Dev of Range Inputs
Bits: 16
Signed: false
Field #3: Std Dev of Major error ellipse
Bits: 8
Signed: false
Field #4: Std Dev of Minor error ellipse
Bits: 8
Signed: false
Field #5: Orientation of error ellipse
Bits: 8
Signed: false
Field #6: Std Dev Lat Error

Bits: 8
Signed: false
Field #7: Std Dev Lon Error
Bits: 8
Signed: false
Field #8: Std Dev Alt Error
Bits: 8
Signed: false

PGN: 129549 - DGNSS Corrections

Field #1: SID
Bits: 8
Signed: false
Field #2: Reference Station ID
Bits: 16
Signed: false
Field #3: Reference Station Type
Bits: 16
Signed: false
Field #4: Time of corrections
Bits: 8
Signed: false
Field #5: Station Health
Bits: 8
Signed: false
Field #6: Reserved Bits
Bits: 8
Signed: false
Field #7: Satellite ID
Bits: 8
Signed: false
Field #8: PRC
Bits: 8
Signed: false
Field #9: RRC
Bits: 8
Signed: false
Field #10: UDRE
Bits: 8
Signed: false
Field #11: IOD
Bits: 8
Signed: false

PGN: 129550 - GNSS Differential Correction Receiver Interface

Field #1: Channel
Bits: 8
Signed: false

Field #2: Frequency
Bits: 8
Signed: false
Field #3: Serial Interface Bit Rate
Bits: 8
Signed: false
Field #4: Serial Interface Detection Mode
Bits: 8
Signed: false
Field #5: Differential Source
Bits: 8
Signed: false
Field #6: Differential Operation Mode
Bits: 8
Signed: false

PGN: 129551 - GNSS Differential Correction Receiver Signal

Field #1: SID
Bits: 8
Signed: false
Field #2: Channel
Bits: 8
Signed: false
Field #3: Signal Strength
Bits: 8
Signed: false
Field #4: Signal SNR
Bits: 8
Signed: false
Field #5: Frequency
Bits: 8
Signed: false
Field #6: Station Type
Bits: 8
Signed: false
Field #7: Station ID
Bits: 8
Signed: false
Field #8: Differential Signal Bit Rate
Bits: 8
Signed: false
Field #9: Differential Signal Detection Mode
Bits: 8
Signed: false
Field #10: Used as Correction Source
Bits: 8
Signed: false
Field #11: Reserved - Reserved
Bits: 8
Signed: false

Field #12: Differential Source
Bits: 8
Signed: false
Field #13: Time since Last Sat Differential Sync
Bits: 8
Signed: false
Field #14: Satellite Service ID No.
Bits: 8
Signed: false

PGN: 129556 - GLONASS Almanac Data

Field #1: PRN
Bits: 8
Signed: false
Field #2: NA
Bits: 8
Signed: false
Field #3: CnA
Bits: 8
Signed: false
Field #4: HnA
Bits: 8
Signed: false
Field #5: (epsilon)nA
Bits: 8
Signed: false
Field #6: (deltaTnA)DOT
Bits: 8
Signed: false
Field #7: (omega)nA
Bits: 8
Signed: false
Field #8: (delta)TnA
Bits: 8
Signed: false
Field #9: tnA
Bits: 8
Signed: false
Field #10: (lambda)nA
Bits: 8
Signed: false
Field #11: (delta)inA
Bits: 8
Signed: false
Field #12: tcA
Bits: 8
Signed: false
Field #13: tnA
Bits: 8
Signed: false

PGN: 129792 - AIS DGNSS Broadcast Binary Message

Field #1: Message ID
Bits: 8
Signed: false

Field #2: Repeat Indicator
Bits: 8
Signed: false

Field #3: Source ID
Bits: 8
Signed: false

Field #4: NMEA 2000 Reserved
Bits: 8
Signed: false

Field #5: AIS Tranceiver Information
Bits: 8
Signed: false

Field #6: Spare
Bits: 8
Signed: false

Field #7: Longitude
Bits: 8
Signed: false

Field #8: Latitude
Bits: 8
Signed: false

Field #9: NMEA 2000 Reserved
Bits: 8
Signed: false

Field #10: Spare
Bits: 8
Signed: false

Field #11: Number of Bits in Binary Data Field
Bits: 8
Signed: false

Field #12: Binary Data
Bits: 64
Type: Binary data
Signed: false

PGN: 129793 - AIS UTC and Date Report

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false

```
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false
Field #4: Longitude
Bits: 32
Type: Longitude
Signed: false
Field #5: Latitude
Bits: 32
Type: Latitude
Signed: false
Field #6: Position Accuracy
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Low
Lookup: 1=High
Field #7: RAIM
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=not in use
Lookup: 1=in use
Field #8: Reserved - NMEA reserved to align next data on byte boundary
Bits: 6
Type: Binary data
Signed: false
Field #9: Position Time
Bits: 32
Type: Time
Signed: false
Field #10: Communication State - Information used by the TDMA slot
allocation algorithm and synchronization information
Bits: 19
Type: Integer
Signed: false
Field #11: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved
```

Field #12: Position Date
Bits: 16
Type: Date
Signed: true

Field #13: Reserved - NMEA reserved to align next data on byte boundary
Bits: 4
Type: Binary data
Signed: false

Field #14: GNSS type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=undefined
Lookup: 1=GPS
Lookup: 2=GLONASS
Lookup: 3=GPS+GLONASS
Lookup: 4=Loran-C
Lookup: 5=Chayka
Lookup: 6=integrated
Lookup: 7=surveyed
Lookup: 8=Galileo

Field #15: Spare
Bits: 8
Type: Binary data
Signed: false

PGN: 129798 - AIS SAR Aircraft Position Report

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #4: Longitude
Bits: 32
Type: Longitude
Signed: false

Field #5: Latitude
Bits: 32
Type: Latitude

Signed: false
Field #6: Position Accuracy
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Low
Lookup: 1=High

Field #7: RAIM
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=not in use
Lookup: 1=in use

Field #8: Time Stamp - 0-59 = UTC second when the report was generated
Bits: 6
Type: Lookup table
Signed: false
Lookup: 60=Not available
Lookup: 61=Manual input mode
Lookup: 62=Dead reckoning mode
Lookup: 63=Positioning system is inoperative

Field #9: COG
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #10: SOG
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #11: Communication State - Information used by the TDMA slot allocation algorithm and synchronization information
Bits: 19
Type: Integer
Signed: false

Field #12: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #13: Altitude
Bits: 64
Units: m
Resolution: 1e-06
Signed: true

Field #14: Reserved for Regional Applications
Bits: 8
Signed: false

Field #15: DTE
Bits: 1
Type: Lookup table
Signed: false
Lookup: 0=Available
Lookup: 1=Not available

Field #16: Reserved - reserved
Bits: 7
Type: Binary data
Signed: false

PGN: 129799 - Radio Frequency/Mode/Power

Field #1: Rx Frequency
Bits: 32
Units: Hz
Resolution: 10
Signed: false

Field #2: Tx Frequency
Bits: 32
Units: Hz
Resolution: 10
Signed: false

Field #3: Radio Channel
Bits: 8
Signed: false

Field #4: Tx Power
Bits: 8
Signed: false

Field #5: Mode
Bits: 8
Signed: false

Field #6: Channel Bandwidth
Bits: 8
Signed: false

PGN: 129800 - AIS UTC/Date Inquiry

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission

Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: Source ID
Bits: 30
Signed: false
Field #4: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved
Field #6: Reserved - reserved
Bits: 3
Type: Binary data
Signed: false
Field #7: Destination ID
Bits: 30
Signed: false
Field #8: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

PGN: 129802 - AIS Safety Related Broadcast Message

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: Source ID
Bits: 30
Type: Integer
Signed: false
Field #4: Reserved - reserved
Bits: 2
Type: Binary data

Signed: false
Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved
Field #6: Reserved - reserved
Bits: 3
Type: Binary data
Signed: false
Field #7: Safety Related Text
Bits: 288
Type: ASCII text
Signed: false

PGN: 129803 - AIS Interrogation

The last 8 fields repeat until the data is exhausted.

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: Source ID
Bits: 30
Type: Integer
Signed: false
Field #4: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission

Lookup: 4=Own information not broadcast
Lookup: 5=Reserved
Field #6: Reserved - reserved
Bits: 3
Type: Binary data
Signed: false
Field #7: Destination ID
Bits: 30
Type: Integer
Signed: false
Field #8: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #9: Message ID A
Bits: 8
Type: Integer
Signed: false
Field #10: Slot Offset A
Bits: 14
Type: Integer
Signed: false
Field #11: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #12: Message ID B
Bits: 8
Type: Integer
Signed: false
Field #13: Slot Offset B
Bits: 14
Type: Integer
Signed: false
Field #14: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

PGN: 129805 - AIS Data Link Management Message

The last 4 fields repeat until the data is exhausted.

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial

Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: Source ID
Bits: 30
Type: Integer
Signed: false

Field #4: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #6: Reserved - reserved
Bits: 3
Type: Binary data
Signed: false

Field #7: Offset
Bits: 10
Type: Integer
Signed: false

Field #8: Number of Slots
Bits: 8
Type: Integer
Signed: false

Field #9: Timeout
Bits: 8
Type: Integer
Signed: false

Field #10: Increment
Bits: 8
Type: Integer
Signed: false

PGN: 129806 - AIS Channel Management

Field #1: Message ID
Bits: 6
Signed: false

Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false

Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: Source ID
Bits: 30
Type: Integer
Signed: false

Field #4: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #5: AIS Transceiver information
Bits: 5
Type: Lookup table
Signed: false
Lookup: 0=Channel A VDL reception
Lookup: 1=Channel B VDL reception
Lookup: 2=Channel A VDL transmission
Lookup: 3=Channel B VDL transmission
Lookup: 4=Own information not broadcast
Lookup: 5=Reserved

Field #6: Reserved - reserved
Bits: 3
Type: Binary data
Signed: false

Field #7: Channel A
Bits: 7
Signed: false

Field #8: Channel B
Bits: 7
Signed: false

Field #9: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #10: Power - reserved
Bits: 8
Signed: false

Field #11: Tx/Rx Mode
Bits: 8
Type: Integer
Signed: false

Field #12: North East Longitude Corner 1
Bits: 32
Type: Longitude
Signed: false

Field #13: North East Latitude Corner 1
Bits: 32
Type: Latitude
Signed: false

Field #14: South West Longitude Corner 1

Bits: 32
Type: Longitude
Signed: false
Field #15: South West Latitude Corner 2
Bits: 32
Type: Latitude
Signed: false
Field #16: Reserved - reserved
Bits: 6
Type: Binary data
Signed: false
Field #17: Addressed or Broadcast Message Indicator
Bits: 2
Signed: false
Field #18: Channel A Bandwidth
Bits: 7
Type: Integer
Signed: false
Field #19: Channel B Bandwidth
Bits: 7
Type: Integer
Signed: false
Field #20: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false
Field #21: Transitional Zone Size
Bits: 8
Signed: false

PGN: 129807 - AIS Class B Group Assignment

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat Indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: Source ID
Bits: 30
Type: Integer
Signed: false
Field #4: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #5: Tx/Rx Mode
Bits: 2
Type: Integer
Signed: false

Field #6: Reserved - reserved
Bits: 6
Type: Binary data
Signed: false

Field #7: North East Longitude Corner 1
Bits: 32
Type: Longitude
Signed: false

Field #8: North East Latitude Corner 1
Bits: 32
Type: Latitude
Signed: false

Field #9: South West Longitude Corner 1
Bits: 32
Type: Longitude
Signed: false

Field #10: South West Latitude Corner 2
Bits: 32
Type: Latitude
Signed: false

Field #11: Station Type
Bits: 8
Signed: false

Field #12: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #13: Ship and Cargo Filter
Bits: 6
Signed: false

Field #14: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #15: Reporting Interval
Bits: 16
Signed: false

Field #16: Quiet Time
Bits: 16
Signed: false

PGN: 129808 - DSC Call Information

The last 2 fields repeat until the data is exhausted.

Field #1: DSC Format Symbol
Bits: 8

Signed: false
Field #2: DSC Category Symbol
Bits: 8
Signed: false
Field #3: DSC Message Address
Bits: 8
Signed: false
Field #4: Nature of Distress or 1st Telecommand
Bits: 8
Signed: false
Field #5: Subsequent Communication Mode or 2nd Telecommand
Bits: 8
Signed: false
Field #6: Proposed Rx Frequency/Channel
Bits: 8
Signed: false
Field #7: Proposed Tx Frequency/Channel
Bits: 8
Signed: false
Field #8: Telephone Number
Bits: 8
Signed: false
Field #9: Latitude of Vessel Reported
Bits: 32
Type: Latitude
Signed: false
Field #10: Longitude of Vessel Reported
Bits: 32
Type: Longitude
Signed: false
Field #11: Time of Position
Bits: 32
Type: Time
Signed: false
Field #12: User ID of Ship In Distress
Bits: 32
Units: MMSI
Type: Integer
Signed: false
Field #13: DSC EOS Symbol
Bits: 8
Signed: false
Field #14: Expansion Enabled
Bits: 8
Signed: false
Field #15: Calling Rx Frequency/Channel
Bits: 8
Signed: false
Field #16: Calling Tx Frequency/Channel
Bits: 8
Signed: false
Field #17: Time of Receipt

Bits: 32
Type: Time
Signed: false
Field #18: Date of Receipt
Bits: 16
Type: Date
Signed: false
Field #19: DSC Equipment Assigned Message ID
Bits: 8
Signed: false
Field #20: DSC Expansion Field Symbol
Bits: 8
Signed: false
Field #21: DSC Expansion Field Data
Bits: 8
Signed: false

PGN: 129809 - AIS Class B static data (msg 24 Part A)

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false
Field #4: Name
Bits: 160
Type: ASCII text
Signed: false

PGN: 129810 - AIS Class B static data (msg 24 Part B)

Field #1: Message ID
Bits: 6
Signed: false
Field #2: Repeat indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial

Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #3: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #4: Type of ship
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=unavailable
Lookup: 20=Wing In Ground
Lookup: 29=Wing In Ground (no other information)
Lookup: 30=Fishing
Lookup: 31=Towing
Lookup: 32=Towing exceeds 200m or wider than 25m
Lookup: 33=Engaged in dredging or underwater operations
Lookup: 34=Engaged in diving operations
Lookup: 35=Engaged in military operations
Lookup: 36=Sailing
Lookup: 37=Pleasure
Lookup: 40=High speed craft
Lookup: 71=High speed craft carrying dangerous goods
Lookup: 72=High speed craft hazard cat B
Lookup: 73=High speed craft hazard cat C
Lookup: 74=High speed craft hazard cat D
Lookup: 79=High speed craft (no additional information)
Lookup: 50=Pilot vessel
Lookup: 51=SAR
Lookup: 52=Tug
Lookup: 53=Port tender
Lookup: 54=Anti-pollution
Lookup: 55=Law enforcement
Lookup: 56=Spare
Lookup: 57=Spare #2
Lookup: 58=Medical
Lookup: 59=RR Resolution No.18
Lookup: 60=Passenger ship
Lookup: 69=Passenger ship (no additional information)
Lookup: 70=Cargo ship
Lookup: 71=Cargo ship carrying dangerous goods
Lookup: 72=Cargo ship hazard cat B
Lookup: 73=Cargo ship hazard cat C
Lookup: 74=Cargo ship hazard cat D
Lookup: 79=Cargo ship (no additional information)
Lookup: 80=Tanker
Lookup: 81=Tanker carrying dangerous goods
Lookup: 82=Tanker hazard cat B
Lookup: 83=Tanker hazard cat C
Lookup: 84=Tanker hazard cat D

```

Lookup: 89=Tanker (no additional information)
Lookup: 90=Other
Lookup: 91=Other carrying dangerous goods
Lookup: 92=Other hazard cat B
Lookup: 93=Other hazard cat C
Lookup: 94=Other hazard cat D
Lookup: 99=Other (no additional information)
Field #5: Vendor ID
Bits: 56
Type: ASCII text
Signed: false
Field #6: Callsign - 0=unavailable
Bits: 56
Type: ASCII text
Signed: false
Field #7: Length
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #8: Beam
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #9: Position reference from Starboard
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #10: Position reference from Bow
Bits: 16
Units: m
Resolution: 0.1
Signed: false
Field #11: Mothership User ID - MMSI of mother ship sent by daughter
vessels
Bits: 32
Units: MMSI
Type: Integer
Signed: false
Field #12: Reserved - reserved
Bits: 2
Type: Integer
Signed: false
Field #13: Spare - 0=unavailable
Bits: 6
Type: Integer
Signed: false

```

The last 9 fields repeat until the data is exhausted.

Field #1: Start Database ID
Bits: 8
Signed: false

Field #2: nItems
Bits: 8
Signed: false

Field #3: Number of Databases Available
Bits: 8
Signed: false

Field #4: Database ID
Bits: 8
Signed: false

Field #5: Database Name
Bits: 64
Type: ASCII text
Signed: false

Field #6: Database Timestamp
Bits: 32
Type: Time
Signed: false

Field #7: Database Datestamp
Bits: 16
Type: Date
Signed: false

Field #8: WP Position Resolution
Bits: 6
Signed: false

Field #9: Reserved - reserved
Bits: 2
Type: Binary data
Signed: false

Field #10: Number of Routes in Database
Bits: 16
Signed: false

Field #11: Number of WPs in Database
Bits: 16
Signed: false

Field #12: Number of Bytes in Database
Bits: 16
Signed: false

PGN: 130065 - Route and WP Service - Route List

The last 6 fields repeat until the data is exhausted.

Field #1: Start Route ID
Bits: 8
Signed: false

Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of Routes in Database
Bits: 8
Signed: false
Field #4: Database ID
Bits: 8
Signed: false
Field #5: Route ID
Bits: 8
Signed: false
Field #6: Route Name
Bits: 64
Type: ASCII text
Signed: false
Field #7: Reserved - reserved
Bits: 4
Type: Binary data
Signed: false
Field #8: WP Identification Method
Bits: 2
Signed: false
Field #9: Route Status
Bits: 2
Signed: false

PGN: 130066 - Route and WP Service - Route/WP-List Attributes

Field #1: Database ID
Bits: 8
Signed: false
Field #2: Route ID
Bits: 8
Signed: false
Field #3: Route/WP-List Name
Bits: 64
Type: ASCII text
Signed: false
Field #4: Route/WP-List Timestamp
Bits: 32
Type: Time
Signed: false
Field #5: Route/WP-List Datestamp
Bits: 16
Type: Date
Signed: false
Field #6: Change at Last Timestamp
Bits: 8
Signed: false
Field #7: Number of WPs in the Route/WP-List

Bits: 16
Signed: false
Field #8: Critical supplementary parameters
Bits: 8
Signed: false
Field #9: Navigation Method
Bits: 2
Signed: false
Field #10: WP Identification Method
Bits: 2
Signed: false
Field #11: Route Status
Bits: 2
Signed: false
Field #12: XTE Limit for the Route
Bits: 16
Signed: false

PGN: 130067 - Route and WP Service - Route - WP Name & Position

The last 4 fields repeat until the data is exhausted.

Field #1: Start RPS#
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of WPs in the Route/WP-List
Bits: 16
Signed: false
Field #4: Database ID
Bits: 8
Signed: false
Field #5: Route ID
Bits: 8
Signed: false
Field #6: WP ID
Bits: 8
Signed: false
Field #7: WP Name
Bits: 64
Type: ASCII text
Signed: false
Field #8: WP Latitude
Bits: 32
Type: Latitude
Signed: false
Field #9: WP Longitude
Bits: 32
Type: Longitude

Signed: false

PGN: 130068 - Route and WP Service - Route - WP Name

The last 2 fields repeat until the data is exhausted.

Field #1: Start RPS#
Bits: 8
Signed: false

Field #2: nItems
Bits: 8
Signed: false

Field #3: Number of WPs in the Route/WP-List
Bits: 16
Signed: false

Field #4: Database ID
Bits: 8
Signed: false

Field #5: Route ID
Bits: 8
Signed: false

Field #6: WP ID
Bits: 8
Signed: false

Field #7: WP Name
Bits: 64
Type: ASCII text
Signed: false

PGN: 130069 - Route and WP Service - XTE Limit & Navigation Method

The last 6 fields repeat until the data is exhausted.

Field #1: Start RPS#
Bits: 8
Signed: false

Field #2: nItems
Bits: 8
Signed: false

Field #3: Number of WPs with a specific XTE Limit or Nav. Method
Bits: 16
Signed: false

Field #4: Database ID
Bits: 8
Signed: false

Field #5: Route ID
Bits: 8
Signed: false

Field #6: RPS#
Bits: 8

Signed: false
Field #7: XTE limit in the leg after WP
Bits: 16
Signed: false
Field #8: Nav. Method in the leg after WP
Bits: 4
Signed: false
Field #9: Reserved
Bits: 4
Type: Binary data
Signed: false

PGN: 130070 - Route and WP Service - WP Comment

The last 2 fields repeat until the data is exhausted.

Field #1: Start ID
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of WPs with Comments
Bits: 16
Signed: false
Field #4: Database ID
Bits: 8
Signed: false
Field #5: Route ID
Bits: 8
Signed: false
Field #6: WP ID / RPS#
Bits: 8
Signed: false
Field #7: Comment
Bits: 64
Type: ASCII text
Signed: false

PGN: 130071 - Route and WP Service - Route Comment

The last 2 fields repeat until the data is exhausted.

Field #1: Start Route ID
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of Routes with Comments

Bits: 16
Signed: false
Field #4: Database ID
Bits: 8
Signed: false
Field #5: Route ID
Bits: 8
Signed: false
Field #6: Comment
Bits: 64
Type: ASCII text
Signed: false

PGN: 130072 - Route and WP Service - Database Comment

The last 2 fields repeat until the data is exhausted.

Field #1: Start Database ID
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of Databases with Comments
Bits: 16
Signed: false
Field #4: Database ID
Bits: 8
Signed: false
Field #5: Comment
Bits: 64
Type: ASCII text
Signed: false

PGN: 130073 - Route and WP Service - Radius of Turn

The last 2 fields repeat until the data is exhausted.

Field #1: Start RPS#
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of WPs with a specific Radius of Turn
Bits: 16
Signed: false
Field #4: Database ID
Bits: 8
Signed: false

Field #5: Route ID
Bits: 8
Signed: false
Field #6: RPS#
Bits: 8
Signed: false
Field #7: Radius of Turn
Bits: 16
Signed: false

PGN: 130074 - Route and WP Service - WP List - WP Name & Position

The last 4 fields repeat until the data is exhausted.

Field #1: Start WP ID
Bits: 8
Signed: false
Field #2: nItems
Bits: 8
Signed: false
Field #3: Number of valid WPs in the WP-List
Bits: 16
Signed: false
Field #4: Database ID
Bits: 8
Signed: false
Field #5: Reserved - reserved
Bits: 8
Signed: false
Field #6: WP ID
Bits: 8
Signed: false
Field #7: WP Name
Bits: 64
Type: ASCII text
Signed: false
Field #8: WP Latitude
Bits: 32
Type: Latitude
Signed: false
Field #9: WP Longitude
Bits: 32
Type: Longitude
Signed: false

PGN: 130312 - Temperature

Field #1: SID
Bits: 8
Signed: false

Field #2: Temperature Instance
Bits: 4
Signed: false
Field #3: Temperature Source
Bits: 4
Signed: false
Field #4: Actual Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #5: Set Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false

PGN: 130313 - Humidity

Field #1: SID
Bits: 8
Signed: false
Field #2: Humidity Instance
Bits: 4
Signed: false
Field #3: Humidity Source
Bits: 4
Signed: false
Field #4: Actual Humidity
Bits: 16
Units:
Signed: false
Field #5: Set Humidity
Bits: 16
Units:
Signed: false

PGN: 130314 - Actual Pressue

Field #1: SID
Bits: 8
Signed: false
Field #2: Pressure Instance
Bits: 4
Signed: false
Field #3: Pressure Source
Bits: 4
Signed: false
Field #4: Pressure
Bits: 16

Units:
Signed: false

PGN: 130315 - Set Pressure

Field #1: Pressure Instance
Bits: 4
Signed: false
Field #2: Pressure Source
Bits: 4
Signed: false
Field #3: Pressure
Bits: 16
Units:
Signed: false

PGN: 130322 - Current Station Data

Field #1: Mode
Bits: 4
Signed: false
Field #2: Reserved
Bits: 4
Type: Integer
Signed: false
Field #3: Measurement Date - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false
Field #4: Measurement Time
Bits: 32
Type: Time
Signed: false
Field #5: Station Latitude
Bits: 32
Type: Latitude
Signed: false
Field #6: Station Longitude
Bits: 32
Type: Longitude
Signed: false
Field #7: Measurement Depth - Depth below transducer
Bits: 32
Units: m
Resolution: 0.01
Signed: false
Field #8: Current speed
Bits: 16
Units: m/s
Resolution: 0.01

Signed: false
Field #9: Current flow direction
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false
Field #10: Water Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #11: Station ID
Bits: 16
Type: String with start/stop byte
Signed: false
Field #12: Station Name
Bits: 16
Type: String with start/stop byte
Signed: false

PGN: 130323 - Meteorological Station Data

Field #1: Mode
Bits: 4
Signed: false
Field #2: Reserved
Bits: 4
Type: Integer
Signed: false
Field #3: Measurement Date - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false
Field #4: Measurement Time
Bits: 32
Type: Time
Signed: false
Field #5: Station Latitude
Bits: 32
Type: Latitude
Signed: false
Field #6: Station Longitude
Bits: 32
Type: Longitude
Signed: false
Field #7: Wind Speed
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #8: Wind Direction
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #9: Wind Reference
Bits: 3
Type: Lookup table
Signed: false
Lookup: 0=True (referenced to North)
Lookup: 1=Magnetic
Lookup: 2=Apparent
Lookup: 3=True (boat referenced)

Field #10: Reserved - reserved
Bits: 5
Units:
Type: Integer
Signed: false

Field #11: Wind Gusts
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #12: Atmospheric Pressure
Bits: 16
Units: hPa
Signed: false

Field #13: Ambient Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false

Field #14: Station ID
Bits: 16
Type: String with start/stop byte
Signed: false

Field #15: Station Name
Bits: 16
Type: String with start/stop byte
Signed: false

PGN: 130324 - Moored Buoy Station Data

Field #1: Mode
Bits: 4
Signed: false

Field #2: Reserved
Bits: 4
Type: Integer
Signed: false

Field #3: Measurement Date - Days since January 1, 1970
Bits: 16
Type: Date
Signed: false

Field #4: Measurement Time
Bits: 32
Type: Time
Signed: false

Field #5: Station Latitude
Bits: 32
Type: Latitude
Signed: false

Field #6: Station Longitude
Bits: 32
Type: Longitude
Signed: false

Field #7: Wind Speed
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #8: Wind Direction
Bits: 16
Units: Radians
Type: Angle
Resolution: 0.001
Signed: false

Field #9: Wind Reference
Bits: 3
Type: Lookup table
Signed: false
Lookup: 0=True (referenced to North)
Lookup: 1=Magnetic
Lookup: 2=Apparent
Lookup: 3=True (boat referenced)

Field #10: Reserved - reserved
Bits: 5
Units:
Type: Integer
Signed: false

Field #11: Wind Gusts
Bits: 16
Units: m/s
Resolution: 0.01
Signed: false

Field #12: Wave Height
Bits: 16
Signed: false

Field #13: Dominant Wave Period
Bits: 16
Signed: false

Field #14: Atmospheric Pressure

Bits: 16
Units: hPa
Signed: false
Field #15: Pressure Tendency Rate
Bits: 16
Units:
Signed: false
Field #16: Air Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #17: Water Temperature
Bits: 16
Units: K
Type: Temperature
Signed: false
Field #18: Station ID
Bits: 64
Type: ASCII text
Signed: false

PGN: 130816 - Simrad: Text Message

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false
Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine
Field #3: Product Code
Bits: 16
Type: Integer
Signed: false
Field #4: A
Bits: 8
Signed: false
Field #5: B
Bits: 8
Signed: false
Field #6: C
Bits: 8
Signed: false
Field #7: D
Bits: 8
Signed: false
Field #8: SID
Bits: 8

Field #9: Prio Signed: false
Bits: 8
Signed: false
Field #10: Text
Bits: 256
Type: ASCII text
Signed: false

PGN: 130817 - Lowrance: Product Information

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false
Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine
Field #3: Product Code
Bits: 16
Type: Integer
Signed: false
Field #4: Model
Bits: 256
Type: ASCII text
Signed: false
Field #5: A
Bits: 8
Signed: false
Field #6: B
Bits: 8
Signed: false
Field #7: C
Bits: 8
Signed: false
Field #8: Firmware version
Bits: 80
Type: ASCII text
Signed: false
Field #9: Firmware date
Bits: 256
Type: ASCII text
Signed: false
Field #10: Firmware time
Bits: 256
Type: ASCII text
Signed: false

PGN: 130836 - Simnet: Configure

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false

Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine

Field #3: C
Bits: 8
Signed: false

Field #4: Device
Bits: 8
Type: Integer
Signed: false

Field #5: Instance
Bits: 8
Signed: false

Field #6: F
Bits: 4
Signed: false

Field #7: Tank type
Bits: 4
Type: Lookup table
Signed: false
Lookup: 0=Fuel
Lookup: 1=Water
Lookup: 2=Gray water
Lookup: 3=Live well
Lookup: 4=Oil
Lookup: 5=Black water

Field #8: Capacity
Bits: 32
Resolution: 0.1
Signed: false

Field #9: G
Bits: 8
Signed: false

Field #10: H
Bits: 16
Signed: true

Field #11: I
Bits: 8
Signed: true

PGN: 130842 - Simnet: AIS Class B static data (msg 24 Part A)

Field #1: Manufacturer Code

Bits: 11
Type: Manufacturer code
Signed: false
Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine
Field #3: Message ID
Bits: 6
Signed: false
Field #4: Repeat indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission
Field #5: D
Bits: 8
Signed: false
Field #6: E
Bits: 8
Signed: false
Field #7: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false
Field #8: Name
Bits: 160
Type: ASCII text
Signed: false

PGN: 130842 - Simnet: AIS Class B static data (msg 24 Part B)

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false
Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine
Field #3: Message ID
Bits: 6
Signed: false
Field #4: Repeat indicator
Bits: 2

Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #5: D
Bits: 8
Signed: false

Field #6: E
Bits: 8
Signed: false

Field #7: User ID
Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #8: Type of ship
Bits: 8
Type: Lookup table
Signed: false
Lookup: 0=unavailable
Lookup: 20=Wing In Ground
Lookup: 29=Wing In Ground (no other information)
Lookup: 30=Fishing
Lookup: 31=Towing
Lookup: 32=Towing exceeds 200m or wider than 25m
Lookup: 33=Engaged in dredging or underwater operations
Lookup: 34=Engaged in diving operations
Lookup: 35=Engaged in military operations
Lookup: 36=Sailing
Lookup: 37=Pleasure
Lookup: 40=High speed craft
Lookup: 71=High speed craft carrying dangerous goods
Lookup: 72=High speed craft hazard cat B
Lookup: 73=High speed craft hazard cat C
Lookup: 74=High speed craft hazard cat D
Lookup: 79=High speed craft (no additional information)
Lookup: 50=Pilot vessel
Lookup: 51=SAR
Lookup: 52=Tug
Lookup: 53=Port tender
Lookup: 54=Anti-pollution
Lookup: 55=Law enforcement
Lookup: 56=Spare
Lookup: 57=Spare #2
Lookup: 58=Medical
Lookup: 59=RR Resolution No.18
Lookup: 60=Passenger ship
Lookup: 69=Passenger ship (no additional information)
Lookup: 70=Cargo ship
Lookup: 71=Cargo ship carrying dangerous goods

Lookup: 72=Cargo ship hazard cat B
Lookup: 73=Cargo ship hazard cat C
Lookup: 74=Cargo ship hazard cat D
Lookup: 79=Cargo ship (no additional information)
Lookup: 80=Tanker
Lookup: 81=Tanker carrying dangerous goods
Lookup: 82=Tanker hazard cat B
Lookup: 83=Tanker hazard cat C
Lookup: 84=Tanker hazard cat D
Lookup: 89=Tanker (no additional information)
Lookup: 90=Other
Lookup: 91=Other carrying dangerous goods
Lookup: 92=Other hazard cat B
Lookup: 93=Other hazard cat C
Lookup: 94=Other hazard cat D
Lookup: 99=Other (no additional information)

Field #9: Vendor ID

Bits: 56
Type: ASCII text
Signed: false

Field #10: Callsign - 0=unavailable

Bits: 56
Type: ASCII text
Signed: false

Field #11: Length

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #12: Beam

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #13: Position reference from Starboard

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #14: Position reference from Bow

Bits: 16
Units: m
Resolution: 0.1
Signed: false

Field #15: Mothership User ID - Id of mother ship sent by daughter vessels

Bits: 32
Units: MMSI
Type: Integer
Signed: false

Field #16:

Bits: 2
Signed: false

Field #17: Spare - 0=unavailable
Bits: 6
Type: Integer
Signed: false

PGN: 130845 - Simnet: Command 130845

Field #1: Manufacturer Code
Bits: 11
Type: Manufacturer code
Signed: false

Field #2: Industry Code
Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine

Field #3: Message ID
Bits: 6
Signed: false

Field #4: Repeat indicator
Bits: 2
Type: Lookup table
Signed: false
Lookup: 0=Initial
Lookup: 1=First retransmission
Lookup: 2=Second retransmission
Lookup: 3=Final retransmission

Field #5: D
Bits: 8
Signed: false

Field #6: Group
Bits: 8
Signed: false

Field #7: F
Bits: 8
Signed: false

Field #8: G
Bits: 8
Signed: false

Field #9: H
Bits: 8
Signed: false

Field #10: I
Bits: 8
Signed: false

Field #11: J
Bits: 8
Signed: false

Field #12: Backlight
Bits: 8
Type: Lookup table

Signed: false
Lookup: 1=Day Mode
Lookup: 4=Night Mode
Lookup: 11=Level 1
Lookup: 22=Level 2
Lookup: 33=Level 3
Lookup: 44=Level 4
Lookup: 55=Level 5
Lookup: 66=Level 6
Lookup: 77=Level 7
Lookup: 88=Level 8
Lookup: 99=Level 9

Field #13: L

Bits: 16
Signed: false

PGN: 130880 - Airmar: Additional Weather Data

Field #1: Manufacturer Code

Bits: 11
Type: Manufacturer code
Signed: false

Field #2: Industry Code

Bits: 5
Type: Lookup table
Signed: false
Lookup: 19=Marine

Field #3: C

Bits: 8
Signed: false

Field #4: Apparent Windchill Temperature

Bits: 16
Units: K
Type: Temperature
Signed: false

Field #5: True Windchill Temperature

Bits: 16
Units: K
Type: Temperature
Signed: false

Field #6: Dewpoint

Bits: 16
Units: K
Type: Temperature
Signed: false

PGN: 130881 - Airmar: Heater Control

Field #1: Manufacturer Code

Bits: 11

Type: Manufacturer code
 Signed: false
Field #2: Industry Code
 Bits: 5
 Type: Lookup table
 Signed: false
 Lookup: 19=Marine
Field #3: C
 Bits: 8
 Signed: false
Field #4: Plate Temperature
 Bits: 16
 Units: K
 Type: Temperature
 Signed: false
Field #5: Air Temperature
 Bits: 16
 Units: K
 Type: Temperature
 Signed: false
Field #6: Dewpoint
 Bits: 16
 Units: K
 Type: Temperature
 Signed: false

PGN: 130944 - Airmar: POST

Field #1: Manufacturer Code
 Bits: 11
 Type: Manufacturer code
 Signed: false
Field #2: Industry Code
 Bits: 5
 Type: Lookup table
 Signed: false
 Lookup: 19=Marine