

ASPL

Navigation & Communication Equipment Suppliers in India

MARINE BUYER'S GUIDE

AIS, GMDSS & NMEA Interfacing: A Practical Guide for Indian Vessel Operators

AIS transponders, GMDSS radio equipment and the NMEA networking that ties a vessel's electronics together — what's mandatory, what's optional, and how to choose between them.

WHAT IT IS

What this equipment does

This category covers two things a working vessel's electronics depend on: AIS (Automatic Identification System), a VHF-based tracking system that lets vessels broadcast their identity, position, course and speed to nearby ships and shore stations and receive the same from everyone else in range, and the NMEA networking, interfacing and connectivity gear that gets that data, and every other instrument's data, onto a chartplotter or display where it's actually useful. AIS identifies vessels by name and doesn't need line of sight the way radar does, and works alongside radar rather than instead of it: together they give a bridge team both a plotted target's identity (AIS) and an independent, transponder-free detection of anything nearby (radar), the practical picture COLREGS, the International Regulations for Preventing Collisions at Sea, assumes a vessel is keeping when assessing collision risk. None of that reaches a display without the wiring, protocol translation and connectivity layer, NMEA 0183 and NMEA 2000 interfacing, converters and gateways, multiplexers and splitters, plus 4G/Wi-Fi routers and marine PCs, that ties a GPS, AIS, autopilot, chartplotter and instruments into one coherent system.

HOW IT WORKS

The underlying technology

An AIS unit combines a GNSS receiver (for position) with a dedicated VHF transceiver operating on two international AIS channels (161.975 MHz and 162.025 MHz). It transmits a short data burst on a fixed schedule, more often at higher speed or when turning, and every other AIS-equipped vessel or shore station within VHF range receives it and plots it on their own chartplotter or dedicated AIS display. Getting that data, and everything else on board, onto that display is a separate job: NMEA 0183 is an older point-to-point serial standard where one "talker" device sends data down a pair of wires to one or more "listener" devices at a fixed baud rate, commonly 4,800 bps. NMEA 2000 replaces this with a shared CAN-bus backbone, a single cable run every device connects to via short drop cables, so any device on the bus can both send and receive without being wired directly to every other device. Because the two protocols use different wiring, voltage and data formats, connecting an older 0183 instrument to a newer 2000 network usually needs a converter or gateway in between, and mixing multiple 0183 talkers onto one line needs a multiplexer.

Questions worth answering before you buy

Transponder or receiver-only?

A transponder both sends and receives: other vessels see you, and you see them. A receiver-only unit shows you everyone else but keeps you invisible, which is common on smaller leisure craft that aren't required to carry AIS but still want situational awareness.

Class A or Class B?

Class A is the higher-power, higher-reporting-rate standard mandated by SOLAS for the vessel classes below. Class B (in SO or CS variants) is a lower-power standard built for vessels under no mandatory carriage requirement, such as fishing boats, workboats and yachts, at a lower cost and power draw.

Splitter or dedicated antenna?

An AIS splitter lets a transponder share your existing VHF radio antenna, avoiding a second mast fitting. A dedicated AIS antenna is simpler to install and avoids any risk of the splitter degrading either signal, at the cost of one more antenna run.

NMEA 0183 or NMEA 2000?

Older instruments, radios and many AIS units still use NMEA 0183, wired point-to-point at 4,800 baud (38,400 on some high-speed AIS ports). Newer chartplotters, engines and sensors increasingly speak NMEA 2000, a shared backbone that lets many devices plug into one network. Match new hardware to what your existing instruments already use, or budget for a gateway to bridge the two.

Do you need a gateway, converter or multiplexer?

A gateway or converter translates data between NMEA 0183 and NMEA 2000 so a device speaking one protocol can be seen by a network running the other. A multiplexer combines several NMEA 0183 talkers, such as a GPS and an AIS receiver, onto a single output line for a display that only has one input port. Work out which of your devices actually need to talk to which before choosing what to interface them with.

Wired network capacity vs wireless convenience

A wired NMEA 2000 backbone is the most reliable way to share position, depth, wind and engine data across fixed instruments, and every device drawing power from the bus adds to a shared power budget that the backbone can't exceed. Onboard 4G/Wi-Fi routers and wireless bridges add a separate layer on top, letting phones, tablets and laptops pick up chart data, AIS traffic or internet access without running additional cable, which matters most on boats where instruments are spread across multiple stations.

What governs this equipment in India

SOLAS Chapter V, Regulation 19

Sets out which vessel classes must carry AIS: all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages, and all passenger ships irrespective of size.

IMO Resolution MSC.74(69)

The IMO performance standard AIS equipment is built and type-approved against, covering the transponder's reporting behaviour, power output and message format.

SOLAS Chapter V, Regulation 19-1 (LRIT)

A separate, longer-range sibling requirement to AIS: Long-Range Identification and Tracking obliges the same broad categories of SOLAS vessel to transmit identity and position to their flag administration at least every six hours over a satellite link, rather than the short-range VHF broadcast AIS uses. LRIT is a reporting system for flag and port states, not a collision-avoidance tool other vessels can see, which is the key practical difference from AIS.

Vessel Monitoring System (VMS)

A separate satellite-based tracking requirement applied specifically to fishing vessels rather than commercial shipping, mandating a tamper-proof onboard transponder that reports position, course and speed to fisheries authorities at set intervals, for fisheries management and illegal-fishing enforcement rather than collision avoidance. VMS is fisheries-specific and reports privately to a fisheries authority; confirm the current carriage requirement and threshold for a specific Indian fishing vessel directly with the Department of Fisheries, since it is a separate scheme from SOLAS AIS carriage.

NMEA 0183 (IEC 61162-1)

A serial data standard for point-to-point communication between one talker and one or more listeners, typically at 4,800 baud, using standard sentence formats (such as GGA for position or VTG for speed and course) so equipment from different manufacturers can exchange readable data over a simple two-wire connection.

NMEA 2000 (IEC 61162-3)

A CAN-bus based networking standard that lets multiple devices share a single backbone cable rather than being wired individually to each other. It defines standard "PGNs" (Parameter Group Numbers) for common data types, such as GPS position, depth, wind and engine parameters, so instruments from different manufacturers can be plugged into the same network and understand each other's data.

GMDSS carriage requirements are set by sea area (A1 to A4), defined by which alerting coverage reaches the vessel rather than distance from shore: A1 is VHF coastal DSC coverage, A2 adds MF DSC for waters beyond VHF range, A3 adds satellite coverage across most of the world's oceans, and A4 covers the remaining polar regions via HF DSC and NBDP. Equipment must be built and type-approved for the role rather than general-purpose: DSC sets to ITU-R M.493 and MED "Wheel Mark" approval for VHF/MF/HF, dedicated NAVTEX receivers on 518 and 490 kHz, and survival-craft radios built to IMO Resolution MSC.149(77). Confirm the sea area and exact carriage requirement for a specific vessel with the relevant flag or port administration.

Getting it fitted right

Two things matter more than anything else in an AIS install: the VHF antenna needs height and clear line of sight for range, and the GNSS antenna needs an unobstructed view of the sky. Mounted under a hardtop or near tall structures, position fixes (and therefore your reported position) will suffer. Power should come from a dedicated, adequately fused circuit rather than shared with other electronics, since a transponder draws current on every transmit burst. For the network carrying that data onward, an NMEA 2000 backbone runs the length of the boat, with each device connected via a short drop cable tapped into it rather than wired directly to other devices, and terminated with a resistor at each of its two physical ends, no more and no fewer, or the bus will suffer data errors. Every device on the bus draws current from the network's power budget, so check the combined draw against what the backbone's power source can supply, feeding power in from a single well-fused point. For NMEA 0183, keep talker-to-listener wiring runs reasonably short, respect the standard's polarity (swapped wires are a common cause of a no-data fault), and avoid connecting two talkers to the same listener input without a multiplexer, which will corrupt both data streams.

FREQUENTLY ASKED

Common questions

Is AIS mandatory on my vessel?

It depends on vessel class and voyage type. SOLAS Chapter V, Regulation 19 mandates it for ships of 300 GT and above on international voyages, cargo ships of 500 GT and above on domestic voyages, and all passenger ships regardless of size. Smaller commercial and leisure vessels typically aren't required to carry it but often do voluntarily for collision avoidance.

What's the real difference between an AIS transponder and an AIS receiver?

A transponder transmits your own vessel's position as well as receiving others', so you're visible to nearby traffic. A receiver-only unit shows you everyone else's AIS traffic but doesn't transmit anything, so your own vessel stays invisible to other AIS-equipped ships.

Can I use my existing VHF antenna for AIS?

Yes, with an AIS splitter, which shares one antenna between your VHF radio and AIS transponder without either interfering with the other. A dedicated second antenna is simpler to install but takes up an extra mounting point.

Can I connect an NMEA 0183 device to an NMEA 2000 network?

Yes, but not directly, since the two use different wiring and data formats. A converter or gateway sits between the 0183 device and the 2000 backbone, translating sentences from one protocol into the equivalent PGNs on the other so both sides can see the same data.

How many devices can I add to an NMEA 2000 backbone?

It depends on two limits rather than a simple device count: the physical length of the backbone and drop cables, and the total power draw of every connected device against the power budget the backbone can supply. A well-planned installation leaves headroom on both before you add the next instrument.

Do I need an onboard router if I already have NMEA 2000 instruments?

NMEA 2000 handles instrument-to-instrument data such as position, depth and wind, but it doesn't provide internet access or let a phone or tablet pick up that data wirelessly. An onboard 4G/Wi-Fi router or marine PC adds that layer, giving crew and guests connectivity and, depending on the setup, a way to view navigation data on personal devices.

Marine equipment ASPL supplies



AMEC A750 Class A AIS Transponder

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The futureproof and user-friendly AMEC A750 Key Features:
Fully compliant with latest IMO, IEC, and ITU standards Certified for...



GM800

ICOM

MF/HF Transceiver Key Features: Satisfies SOLAS Carriage Requirements Meets Strict Environmental Requirements Meets ITU-R M.493...



Entel DT582M

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IECEx-certified UHF DMR handheld for hazardous areas, with 16 channels, 2W output, IP68 waterproofing and up to 19.5 hours of b...



Haiyang HD-77CF

HAIYANG

The Haiyang HD-77CF is a 7-inch chartplotter/fishfinder combo with dual-frequency sounding up to 1.2kW and IMO Resolution MSC.1...



NAVLink Blue – Bluetooth Sensors to NMEA 2000

DIGITAL YACHT

The Digital Yacht NAVLink Blue is a Bluetooth-to-NMEA 2000 interface that gathers temperature, humidity, and pressure data from...



NaviPro ECS

AMEC

NaviPro ECS is AMEC's Windows-based electronic charting software, running on systems as modest as a 500 MHz processor with 128 ...



EnviroLink – NMEA 2000 Barometer & Marine Weather Station

DIGITAL YACHT

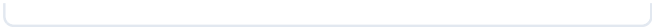
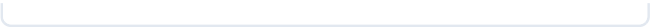
The Digital Yacht EnviroLink is an NMEA 2000 marine weather station measuring atmospheric pressure, temperature, and humidity.



GPS160 NMEA 0183

DIGITAL YACHT

The Digital Yacht GPS160 is a 72-channel multi-GNSS positioning receiver with sub-1m typical accuracy, available in NMEA 0183, ...



Full catalogue and specifications: asplindia.in/products

AIS transponders, GMDSS, VHF and HF communication, NMEA interfacing and onboard connectivity for commercial vessels and port operations.

Compliance equipment

GMDSS, AIS transponders, AIS SARTs and marine VHF meeting carriage requirements.

Bridge integration

NMEA 0183 and NMEA 2000 interfacing between navigation, AIS, autopilot and charting systems.

Onboard connectivity

4G routers, Wi-Fi boosters and marine PCs so crew and systems stay connected offshore and alongside.

Commissioning and training

Fitted, commissioned and handed over, with operator training for bridge crew.

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- 500+ delivery and collection points across India
 - In-house repair, warranty replacement and interfacing

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