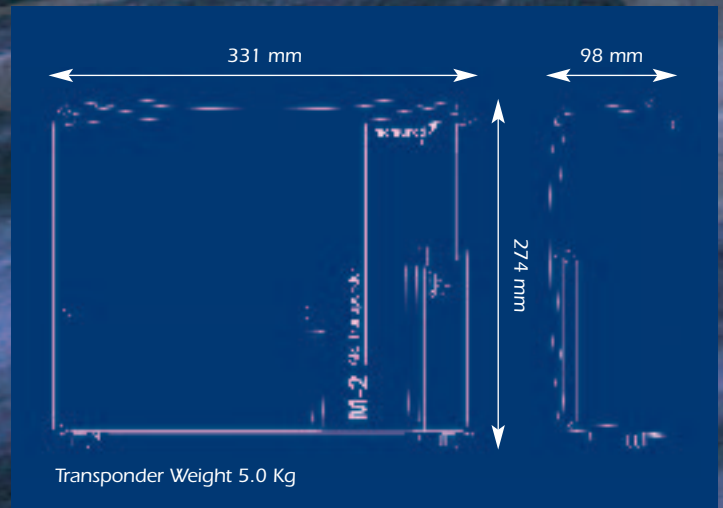
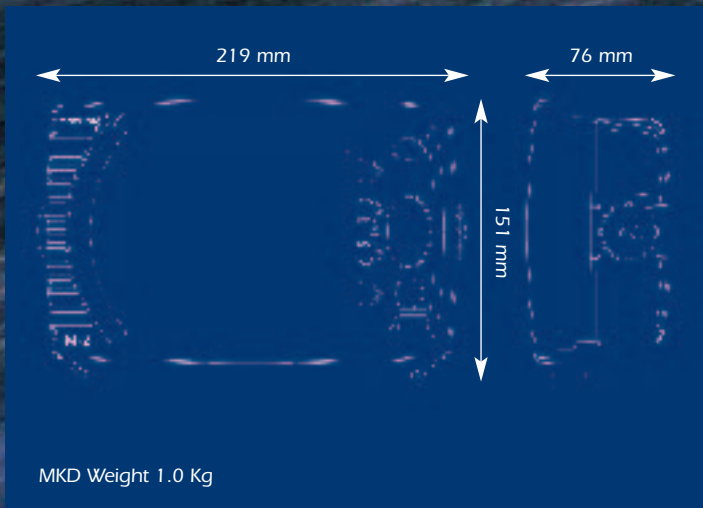


Specifications



Technical data:

Standards: Meets the requirements of the international standards for Class A Shipborne AIS systems; IMO MSC.74(69) Annex 3, ITU-R M.1371-1, ITU-R M.1084-4, ITU-R M.825-3, IEC 60945, IEC 61993-2, IEC 61162-1,2, IEC 61108-2

Type Approvals:

Marine Equipment Directive (MED) 2002/75/EC
Visit www.mcmurdo.co.uk for latest approvals

Technical specifications:

Power consumption: 15 W average (50 W peak)
Power supply requirements: 24 VDC – 10% + 30%
Default Frequencies: AIS1 161.975 MHz, AIS2 162.025 MHz
DSC channel 70: 156.525 MHz

AIS/DSC Transmitter:

Power output: 12.5 W or 2.0 W
Frequency range: 156.025 MHz - 162.025 MHz

AIS Receivers:

Frequency range: 156.025 MHz - 162.025 MHz
Channel spacing: 12.5 kHz or 25 kHz
Modulation: GMSK
Frequency stability: Better than 1 ppm
Data rate: 9,600 bits/s

DSC Receivers:

Frequency range: VHF Channel 70 (156.525 MHz)
Channel spacing: 25 kHz
Modulation: 1300 Hz/2100 Hz – FSK
Frequency stability: Better than 1 ppm

Transponder connection:

VHF antenna: PL259, 50 Ohms
GNSS antenna: TNC, 50 Ohms
Other connections: plug in screw termination block

IEC 61162-1, -2 interface ports:

4 x navigation sensor input ports SEN1, SEN2, SEN3 and SEN4
2 x Bi-directional input/output ports MAIN and AUX/Pilot
1 x Bi-directional input/output port Long Range

RS422 Sentence support:

IEC 61162-1, -2 sentences

Latitude & Longitude:

GNS, RMC, GGA, GLL

Speed Over Ground:

VBW, RMC, VTG, OSD

Course Over Ground:

RMC, VBW, VTG, OSD

Heading:

HDT, OSD

Rate Of Turn:

ROT, calculated from heading (HDT, OSD)

DGNSS:

RTCM

Integral GNSS:

16 channel GPS receiver, WAAS and EGNOS enabled

Supports DGPS correction by AIS msg 17 or RTCM input port

Provides UTC and fallback navigation position for AIS

GPS antenna:

Construction: Polycarbonate radome

Size: Diameter 115 mm x 75 mm high

Weight: 0.22 Kg

Mounting: 1 1/4 inch thread

Connector: TNC 50 Ohms

Pre-amplifier: gain 30db

Power: Voltage +5 VDC @ 28 mA (supplied by transponder)

MKD Control unit:

Display: 1/2 VGA Monochrome LCD

Backlight: Multi level CFL

Controls: 4 key 2 axis navigation pad, dim and enter keys, 4 menu soft keys

Connection: 15 pin D connector for transponder, 9 pin D connector to Pilot Plug

Environmental

Operating temperature: -15 ° C to +55 ° C

Storage temperature: -20 ° C to +70 ° C

General: as per IEC 60945

MKD control unit: IPX5 splash proof

Ordering Information

- 35-001-001A M-2 AIS system, comprising:
- AIS transponder unit
 - MKD display unit
 - MKD to AIS transponder cable harness, 5m
 - GPS antenna with mounting kit
 - Transponder Connector kit
 - Operator and installation manuals

Installation accessories

Part	Description
89-020-001	AIS VHF antenna, 1.2m 0 db gain
903-01	Antenna bracket -stand off mast
903-02	Antenna bracket -stand off mast / bulkhead
89-081-001A	Pilot plug kit to AIS transponder, 25m cable
89-081-002A	Pilot plug kit to MKD, 5m cable with D plug
89-028	Gyro interface unit - stepper / synchro input - RS422 output
89-029	AIS power supply unit AC+DC input, 24 VDC output
89-038B	AIS installation cable kit

McMurdo has been saving lives for over one hundred years and is trusted for its reliability and technical support by navies, merchant fleets, fishing vessels, rescue services and leisure craft throughout the world.

Other equipment in the McMurdo range includes EPIRBs, PLBs, SARTs, VHF Radios, DSC VHF Radios, survivor location lights, ICS NAVTEX equipment and Pains Wessex® pyrotechnics.

AUTHORISED DEALER

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MEMBERS OF CHEMRING GROUP PLC

Shipborne Automatic Identification System

McMurdo M-2 AIS Transponder



© Klyne Tugs



© Carnival Cruise Lines



M-2 Shipborne Automatic Identification System

The McMurdo M-2 Automatic Identification System (AIS) provides significant safety benefits and improves the effectiveness of safe navigational practices.

AIS gives mariners the ability to view, at a glance, the status of vessels around them and provides access to a host of detailed navigational status information. The AIS transponder automatically transmits own vessel tracking and position information that can be used to assist in avoiding risk of collision. The AIS will display information transmitted by other ships in the vicinity, shore based stations and AIS equipped aids to navigation.

Technology and know-how

Building on our strength as a market leader and world class manufacturer of marine safety equipment, the McMurdo M-2 provides the ideal AIS solution for all types of vessel that are required by legislation, code or national ruling to install AIS. The M-2's compact design and ease of use now means that even the smallest of harbour support craft, tugs and workboats can benefit from the same level of safety of navigation afforded by commercial shipping Worldwide. Comprehensive interface capabilities support connection of the vessels navigation sensors, Automatic RADAR Plotting Aid (ARPA), Electronic Chart Display and Information System (ECDIS) or Electronic Chart System (ECS).

Standards

The McMurdo M-2 fulfils the International Maritime Organisation (IMO) requirements for Class A, Shipborne AIS transponder systems. It is suitable for fitting by all vessels that must comply with the AIS requirements of the Safety Of Life At Sea (SOLAS) convention and any vessel that should fit AIS according to local code or rule requirements under the international code for the security of ships and port facilities (ISPS Code). The McMurdo M-2 is fully in accordance with the European Marine Equipment Directive (MED) and other applicable maritime equipment standards Worldwide.



M-2 Features

- Shipborne Class A AIS
- Versatile Minimum Keyboard and Display unit
- Clear graphical and text presentation of stations
- Integral 16 channel GNSS receiver
- DGNSS correction
- Interfaces to ECS, ECDIS, ARPA
- Pilot plug connection
- Flexible installation options
- Integral ships cable termination board
- IEC 61162-1,-2 sensor interfaces
- Long Range port



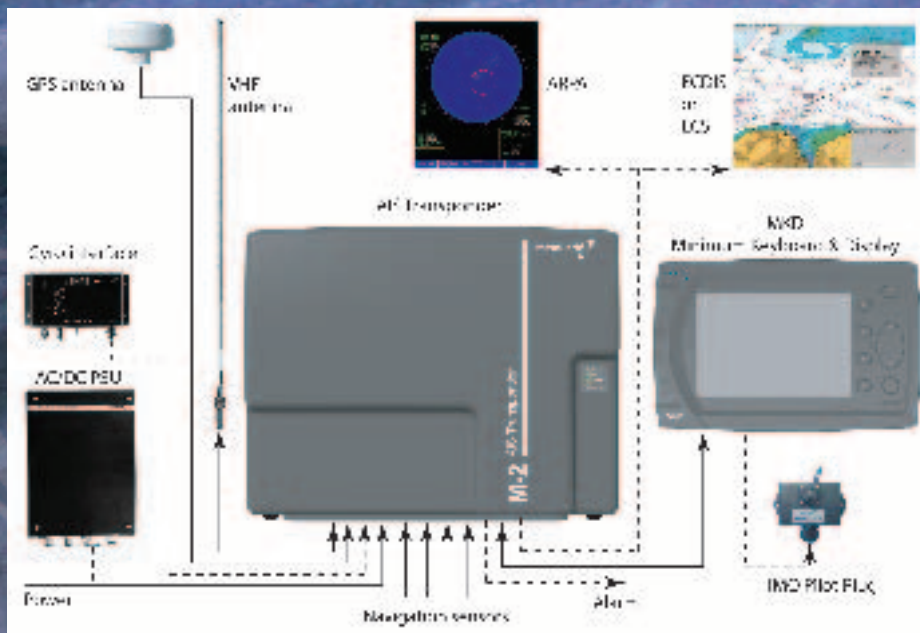
Function

M-2 provides automated communication from 'ship-to-ship' and 'ship-to-shore', of vessel, voyage and safety related information. Static and voyage data information reports are automatically broadcast every 6 minutes. Depending on the speed a vessel is making, dynamic factors are reported in intervals of between 2 seconds and 12 seconds or 3 minutes when at anchor. M-2 provides the officer of the watch with a clear indication of the identity, proximity and bearing of surrounding AIS stations. By providing such high levels of detailed information in clear graphic and text formats the need for unnecessary or confusing VHF voice contact between vessels is greatly reduced. Unaffected by RADAR masking effects, AIS stations remain visible even when RADAR targets may be lost.

Ease of use

Intuitive and easy to operate, M-2's Minimum Keyboard and Display (MKD) has a large 6 inch (152mm), high contrast, backlit LCD graphic display. AIS stations can be displayed as an ordered list or viewed as a geographic plot. M-2's powerful graphics capabilities can plot all surrounding AIS stations to give the officer of the watch a clear overview and best visual understanding of any developing risk to safe navigation. The AIS station list has a split screen view to quickly bring a selected station's detailed static and dynamic information into view. Menu 'Soft Keys' provide for an intuitive user interface and give direct and easy access to all aspects of system operation. Entry of alphanumeric text information is both easy and straightforward using an on-screen keyboard together with a four way navigation pad key. Drop down menu boxes give quick and easy access to standard text phrases that can be edited and re-used when composing text based Short Safety Messages or when updating own vessel voyage, route, and destination details.





Flexible installation

The M-2 AIS transponder unit has an integral 16 channel GNSS receiver, VHF transmitter, three VHF receivers, control electronics and a galvanically isolated power supply unit. All of this is contained within a compact wall mounting enclosure with integral ship's cable screw termination board. Connecting cables run directly into the transponder enclosure, no separate cable junction boxes or complex connectors are needed. The MKD control unit may be remotely mounted from the AIS transponder, this flexible arrangement means that the MKD can always be conveniently located close to the vessel's main navigation position. The M-2 transponder enclosure may be bulkhead or wall mounted, the MKD can be cut directly into a flush panel or fixed to a bulkhead or table top using the fitting kit provided. Maintenance and service is aided by the modular arrangement of the M-2 transponder enclosure, the main electronics unit can be unplugged and removed for exchange without disturbing the ships connecting cables.



Interface capabilities

RS422 sensor input ports are provided for interface connection of the vessel's primary navigation systems, GNSS - GPS or GLONASS navigation receivers, heading sensor / Gyrocompass, Rate Of Turn indicator or bottom track Speed Log. In addition, bi-directional ports allow connection of a remotely mounted IMO Pilot Plug socket and interfacing with ARPA, ECDIS or ECS equipment.



System Configuration

The M-2 may be installed as stand-alone AIS equipment or integrated with an Automatic RADAR Plotting Aid (ARPA), Electronic Chart Display and Information System (ECDIS) or Electronic Chart System (ECS).

Stand-Alone System AIS transponder with MKD is interfaced to the vessel's primary navigation sensors. The MKD is used as both the AIS display unit and AIS control unit.

Electronic Chart Display and Information System (ECDIS) or Electronic Chart System (ECS) with AIS. In this arrangement the stand-alone AIS installation and ECDIS/ECS display have been integrated. The MKD is used mainly to input own ship's information with the ECDIS/ECS having the ability to display AIS station information. This arrangement greatly enhances the presentation of information by displaying AIS stations in an environment normally used for navigation of the vessel.

Many modern **Automatic RADAR Plotting Aids (ARPA)**, have the ability to display AIS station information. By combining these technologies the navigator is provided with the optimum information for safe navigation, directly on the vessels primary RADAR display.

Where approved for this purpose, the ARPA or ECDIS equipment may be used to directly control the function of the AIS transponder.

Installation accessories

An optional AIS installation 'cable kit' contains all the basic installation materials and cables that are typically needed to ready a vessel for installation of the AIS equipment. Other accessories include remote IMO Pilot Plug kits, Gyro Interface Unit - Stepper / Synchro gyro input - RS422 output, AC / DC power supply unit, VHF antenna and a range of antenna bracket options.