

NAVAL SHIPS DATA DISTRIBUTION SYSTEM

Parallel Processor Architecture



Aeronautical & General
Instruments Limited

NAVAL SHIPS DATA DISTRIBUTION SYSTEM

The Naval Ships Data Distribution System is designed to collect, process and prioritise a range of data for distribution on naval ships. The system has a flexible modular architecture and can therefore provide a cost-effective solution for data distribution on various platforms from small patrol craft up to frigate classes.

At the heart of the system is the Data Distribution System Processor (DDSP). The Data Distribution System can range from a single DDSP to multiple units, which may be deployed around the ship at different locations to suit the specific data integrity needs of the individual platform design.

Key features

A scalable modular design:

- Each output is generated by a dedicated processing card. This allows a cost-effective scaled solution to be provided that meets the requirements of the individual ship.
- Processing of the incoming data is independent of the other cards, so system testing/integration is simplified and processing characteristics can be changed without impacting on other elements of the system.
- The system can be extended at any time without the concern of running out of processing power.
- Since each output uses a dedicated processor card, tight data latency requirements can be achieved on every output (up to 1 ms).
- The unit is scalable for up to 50 unique outputs
- Multiple units can be added for 50, 100, 150 etc system outputs.
- Customised processing cards are available that offer different interfacing options.
- Data latencies are fixed, and do not vary with traffic throughput

Data integrity:

- Individual critical output channels can have redundant processing. This may be conducted within the same unit (using adjacent cards) or in a completely separate DDSP.

Control interfaces:

- A dedicated port is provided for connection to a remote monitoring unit.
- An ethernet port is provided to attach a laptop for maintenance activities.

Maintenance laptop

A maintenance interface has been provided to allow detailed diagnostic information to be viewed.

The DDSP is a Military Off The Shelf Product (MOTS), which is customised to the individual needs of the project. The base product is fully qualified for the Naval military environmental standards, and offers a cost-effective solution to a ship's data distribution requirements.

Data distribution systems are qualified to Military Standards, and have been developed and manufactured by Aeronautical & General Instruments Limited (AGI). The system fitted with Ethernet, Synchro and multiple RS422 interfaces has been in service on US Navy Aircraft Carriers since August 2003 in a dual redundant configuration for processing and dissemination of wind, navigational, and meteorological data. Approximately 30 US Navy Aircraft Carriers to Destroyers have been commissioned to date by AGI Ltd under existing contracts.

The DDSP features a new parallel processing concept providing very low data latency, which is independent of data traffic volume. In other words, the latency will not change, as the processor for each output is dedicated. The parallel processing technique can offer near 1 millisecond data latency.



Remote Monitoring Unit (RMU)

The RMU is based on AGI's proven multi-function colour repeater products. It displays the status of the system hardware and associated inputs. It is also used to control certain aspects of the DDSP functionality such as selecting which gyro or GPS data source is to be used. The RMU is configured to the ship's requirements.

Data latency

1 millisecond latency available independent of data traffic/throughput.

MIL Standards

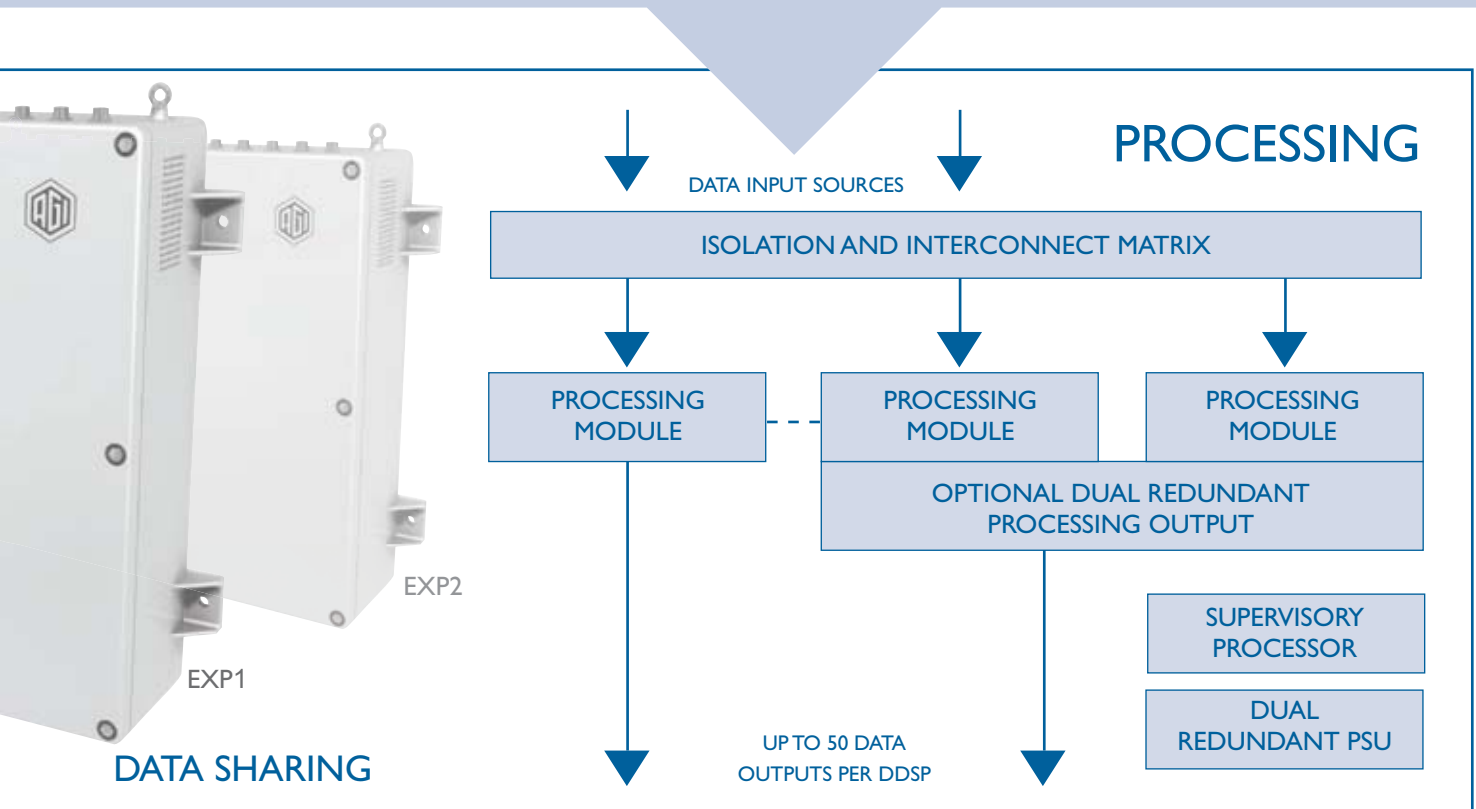
MIL STD 461	EMC
MIL STD 810	ENVIRONMENTAL
MIL STD 901	SHOCK

DATA INPUT SOURCES

- Ethernet fibre optic/cable, RS422, RS485, RS232 etc.
- Heading, roll, pitch, heave
- Echo sounder
- GPS
- Log data (water speed and ground speed)
- Meteorological data (pressure, humidity, temperature, dewpoint etc)
- Wind speed and direction
- Oceanographic data
- Speed
- Time

INTERFACE OPTIONS

- Ethernet
- Single or dual ethernet interfaces
- RS422 (16 or 32 channels) per DDSP
- Synchro outputs 60 Hz or 400 Hz at up to 4.5VA (Max of 10 channels per DDSP)
- HDLC synchronous serial data
- SDLC synchronous serial data
- Custom interfaces including Stang, Mil 1 553 etc.



DATA OUTPUT

- Ethernet fibre optic/cable, RS422, RS485, RS232 etc.
- Aircraft management systems
- Weapon systems
- Combat systems
- Control systems
- Bearing repeaters
- Echo sounders
- Data recorders
- Log systems
- Radar
- Decoy systems



REMOTE USER INTERFACE UNITS AND MULTI-FUNCTION COLOUR REPEATERS



About AGI

AGI is backed by over 40 years of experience in the design, development, manufacture and installation of ship-borne systems and provides full integrated logistic support services, training, installation and documentation.

AGI is accredited to International Quality Standards ISO 9001 and Tick-IT software procedures.

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