ELECTRONICS & DEFENSE

NAVPULSE

Naval Data Distribution Unit
SP/HP/XP

NAVPULSE is a cutting-edge Navigation Data Distribution Unit designed to receive, process, and distribute data from all onboard sensors, delivering the most accurate navigation solution to every user. It provides precise time, attitude, and navigation data to any kind of naval equipment ranging, from weapon systems to observation sights. NAVPULSE is compatible with all naval platforms, from patrol boats to aircraft carriers, and operates even in GNSS denied environments.

Designed to elaborate and distribute critical messages for Ethernet and Serial link subscribers requiring high integrity and very low latencies .

A modular approach

The product line offers a complete range of NDDU from standard junction boxes receiving and distributing standardized messages (on Ethernet, Discrete or RS) to very high performance NDDU capable to acquire, elaborate and distribute safely any kind of tailored messages from INU and onboard sensors to standard and critical users with low latency in a cyber secured environment.

Operational efficiency

Designed for all kinds of maritime heavy operations (Surface or Sub-surface), NAVPULSE provides unmatched performances in terms of modularity and latency.
Immune to severe and constrained operational environments (jammed, spoofed or denied GNSS signals), it provides :

- Modular PNT (Position Navigation and Timing) capacities.
- Real-time navigation sensors management.
- Hardware robustness and resilience to face high intensity interventions.
- Operational sea proven and user-friendly interface.
- Capacity to integrate a robust GNSS interference detection and monitoring suite.

SAFRAN

TECHNICAL SPECIFICATION

Based on SAFRAN Naval Navigation System expertise for defense grade ships, NAVPULSE will ensure :

- Guaranteed low latency distribution of INUs heading & attitudes towards combat system/weapons,
- Precise time keeping and distribution,
- Advanced detection of GNSS jamming and spoofing,
- High fault tolerance : hot redundancy of critical functions & high MTBF,
- Resistance to challenging environments (tested according to MIL-STD standards).
- ITAR free solution

Optimized & modular architecture

- Three different size of enclosures (SP, HP and XP) addressing different class of platforms (OPV/Frigates/submarines/aircraft carriers....)
- Several plug & play modules for more flexibility
- Full compatibility with SIGMA 40 Family & new Argonyx/Black-Onyx INUs
- Easy maintenance with exchangeable modules

Flexibility & standard interfaces

- High variety of supported signals :
  - Navigation : NMEA, ASCII, Binary
  - Timing Signals : 1PPS, TTL pulse, IRIG AM/DCLS
  - Network Services Timing :
    - NTP (v2/v3/v4 according to RFC 1305 & 5905)
    - PTP (v2 according to IEE 1588:2019)
- Interface protocols :
  - RS-422
  - Ethernet 10/100/1000 Base-T (RJ45/Fibre on request)
  - Discrete
  - Synchro attitudes (115V – 400Hz) (on request)

Robust Timing solution

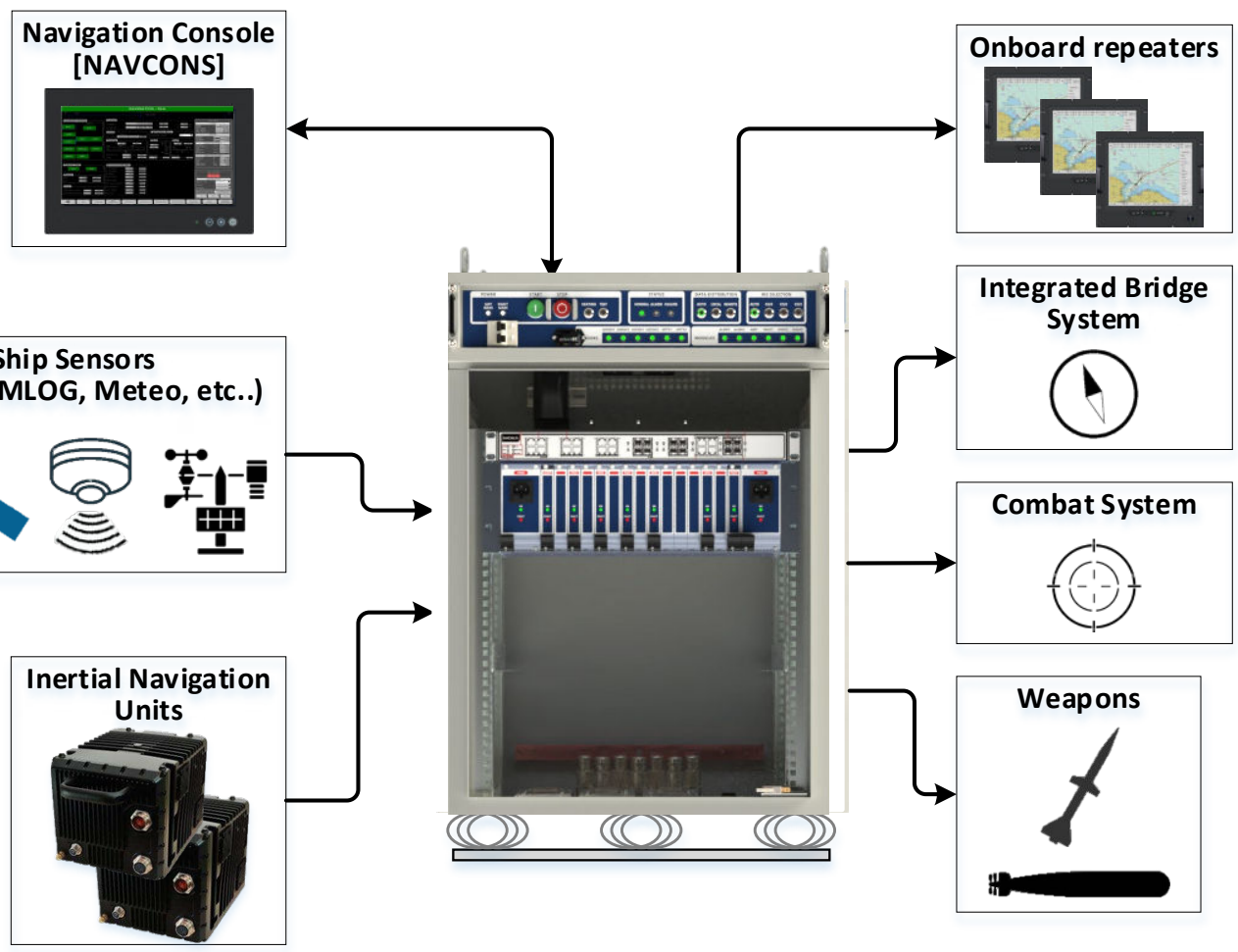
- Internal precision timekeeping via oscillator or atomic clock (on request)
- Multi-GNSS synchronization (GPS, Galileo, GLONASS, BeiDou, QZSS)
- Modular time transfer (configure-to-order)

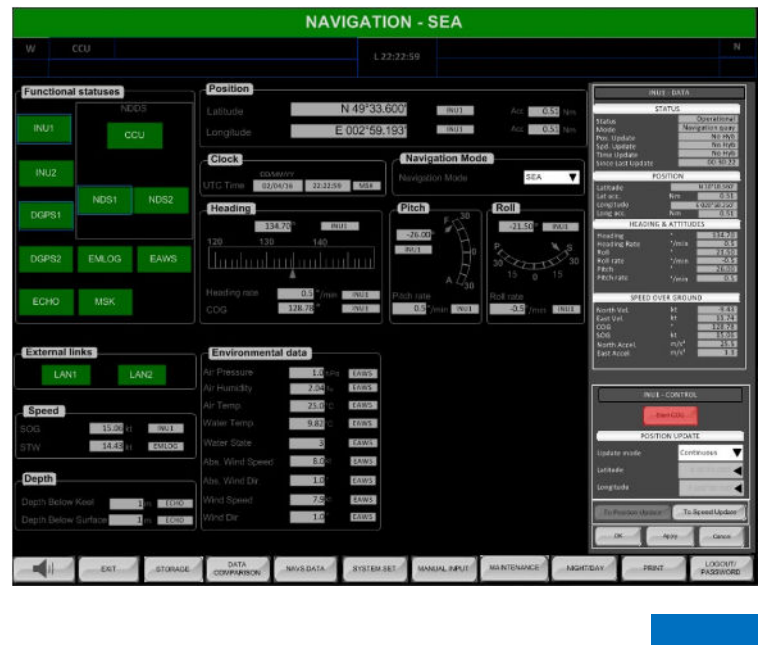
Safe & Redundant architecture

- DDU reliable architecture : internal redundancy of critical modules
- Designed for redundant NDDS : failover mode management between two DDU
- GNSS jamming and spoofing detection option (on request)

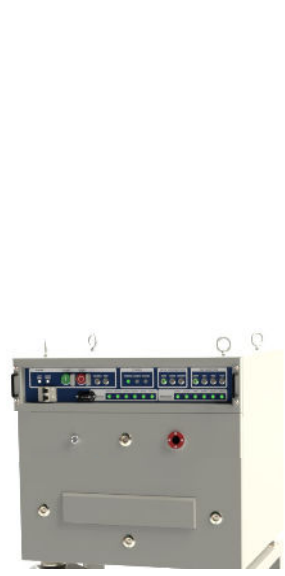
Cyber Secured

- Compliant with cyber defence best practices (cyber events log, support account/access management, authentication, firewall, anti-virus, secured firmware updates, etc..)
- Protection against cyber-attack based on up-to-date solutions
- Data transfer encryption of classified navigation data (on request)





NAVPULSE Family



General Characteristics	NAVPULSE-SP	NAVPULSE-HP	NAVPULSE-XP
I/O Configurability	✓	✓	✓
Cabling	Cable glands	Cable glands Connectors MIL (on request)	Connectors MIL
Master Clock	External	Internal Atomic clock (on request)	Internal Atomic clock (on request)
UPS	External (on request)	External (on request)	Included (on request)
Power supply	115VAC or 230VAC (STANAG 1008)	115VAC or 230VAC (STANAG 1008)	115VAC or 230VAC (STANAG 1008)
Dimensions (H x W x D) in mm	550 x 580 x 520	800 x 580 x 520	1200 x 580 x 520
Redundancy level	External (NDDU duplication)	External & Internal (NDDU & modules duplication)	External & Internal (NDDU & modules duplication)
Cybersecurity level	Standard	Standard/Advanced	Advanced (customable)
GNSS Jamming & Spoofing detection	On request	On request	On request

I/O interfaces

Ethernet	4 native ports	4 native ports (> on request with configurable switch)	4 native ports (> on request with configurable switch)
I/O RS422	Up to 26 RS422	Up to 90 RS422	> 90 RS422 (more on request)
I/O Discrete	Up to 6	Up to 18	>18 (more on request)
Fail Safe mode (direct INU link)	4 RS422 ports	4 RS422 ports	> 8 ports (more on request)
I/O SYNCHRO	Not provided	On request	On request

Performances

I/O rates	1Hz to 200 Hz (configurable on request)
High performance Latency (critical data)	< 1ms
Standard Latency (standard navigation data)	<10ms
Failsafe mode (electronic commutation)	Direct hardware connection with INU(s) in case of Power Failure

Operating & Storage Environment

Operating Temperature	-15°C to +55°C (according to MIL-STD 810G & IEC 60945)
Storage Temperature	-30 to +70°C (according to MIL-STD 810G & IEC 60945)
Humidity	Up to 95% at +40°C (according to IEC 60945)
Shock	30g, 11ms* (according to MIL-STD 810G) (suspended with dampers)
Vibration	According to MIL-STD 167-1 for type 1 equipment & IEC 60945
EMI/EMC	According to MIL-STD 461F & IEC 60945
Ingress Protection	IP54 (according to IEC 60529)
Salt Fog	According to MIL-STD 810G
Standard & Regulation	CE-MED 4.65 (Wheelmark) / REACH / RoHS

**50g, 11ms (MIL-STD 810G) on request with specific dampers*

Safran Electronics & Defense
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