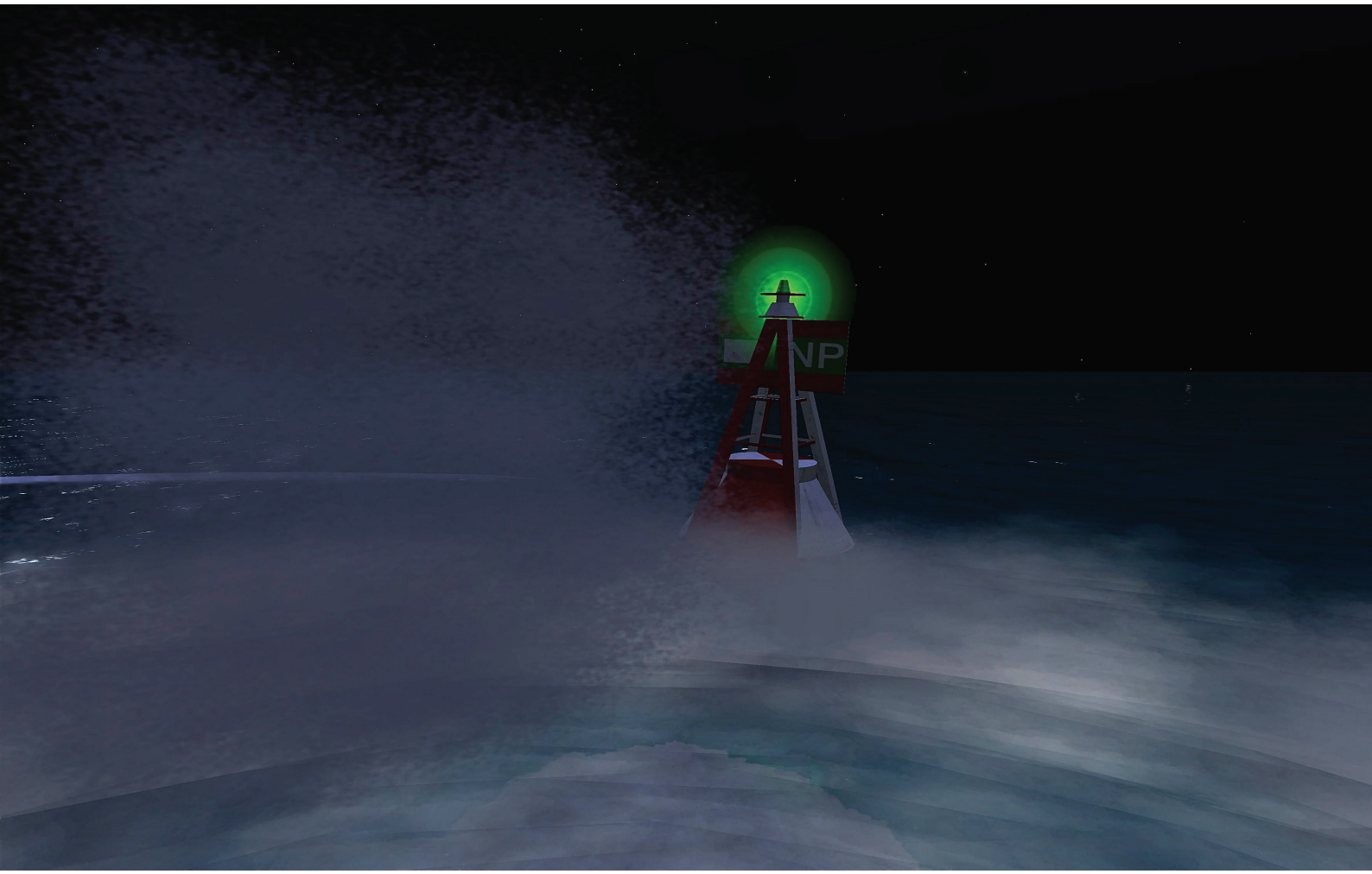
Tactical Asset Management System TAMS-1

NavSim TECHNOLOGY



Tactical Asset Management System

A new C4ISR solution

Advances in the latest technology developed by NavSim revolutionize the way that remote assets can be monitored, managed and maintained. The Tactical Asset Management System (TAMS-1) by NavSim provides local authorities with the means to effectively and seamlessly supervise buoys, beacons, lighthouses, wind turbines or virtually any other type of aid to navigation or remote asset.

Autonomous.
Intelligent.
Persistent.
A new C4ISR Solution.

FEATURES

Autonomous operation

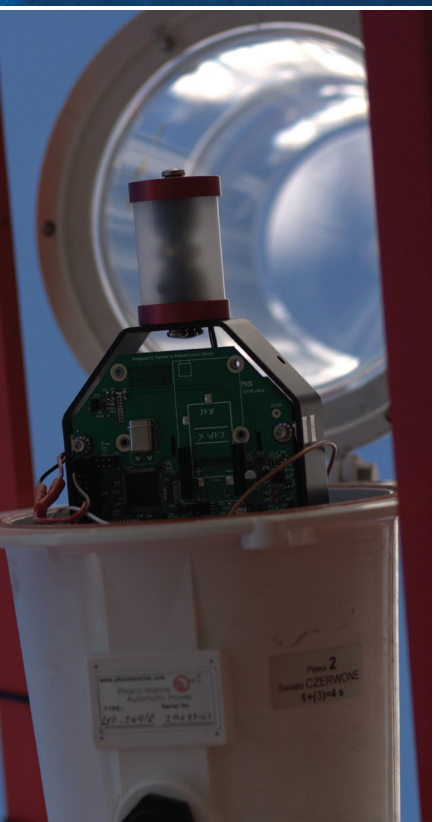
Wide range of alarms and alerts (e.g. battery level, health status, etc.)

Ultra-low power consumption

Designed for compact integration with local infrastructure

Two-way communication via UHF, VHF, GSM, Satellite*

GPS-controlled time synchronisation



The TAMS is a bidirectional multi channel system that enables the establishment of complete AES-encrypted two way communications and data reception with remote or autonomous sensor arrays. The TAMS was designed to interface with and seamlessly integrate different payloads on a remote unit such as a maritime buoy, oil platform, lighthous or any other marine object. Once connected to a NavSim TAMS, each asset becomes a 'smart station' capable of receiving instructions and sending back reports regarding its performance. Lights can be turned on/off all at once (manually or automatically) or work in synchronization. Assets report any internal failures or low battery levels, or in the case of assets like a lighthouse, can inform an operator of unauthorized entry. Additionally, the NavSim TAMS is an ultra-low power consumption solution delivered in a compact size.

How does it work?

Each asset working under TAMS control is equipped with 2 crucial elements: (1) the TAMS-1 controller responsible for gathering, processing and storing all relevant information about its host (ie. a buoy or landmark); (2) A communication module to exchange information with the shore. Additionally, each TAMS can be equipped with a number of payload sensors depending on the operator's needs.

Communication everywhere

It does not matter where your assets are located. Our system flexibility provides grounds for using different means of communication depending on your needs:

- GSM via SMS
- UHF data receiver
- AIS AtoNs Type 1/ Type 3
- Satellite Transceiver

The range of communication modules allows for truly global coverage, providing crucial real-time info even in remote areas such as the High Arctic.

Reporting and alerting

Confidentiality and integrity of transmitted data is assured at every level by the Advanced Encryption Standard for group data encryption. Each 'smart station' working as part of our monitoring system can send performance data and receive commands according to a planned schedule (ie. daily status updates) or on an ad-hoc/on-demand basis. Additionally, in case of any urgent or unexpected events (ie. off position, unauthorized entry, collision with an object), a dedicated communication channel ensures that any triggered alert is delivered instantly to the operator. Finally, whenever required, the characteristics and intensity of any required flashing lights can be adjusted.

FEATURES

Remote changes in equipment settings

Dedicated software for monitoring and management

Integration with Electronic Nautical Charts (S-57/S-63)

Advanced user and group permissions

Web Control Panel

Traffic monitoring

The TAMS functionality allows not only for advanced monitoring and remote managements of assets, but also as an autonomous semi-intelligent device capable of tracking and detecting behaviours of other objects within its programmed detection perimeter. For example, when equipped with an AIS AtoN, the TAMS can monitor traffic in designated areas and provide operators with statistical information about the monitored area and/or act according to the operator's requirements.

Connect your peripherals

In addition to two way communication, the TAMS enables assets to collect many types of data by integrating sensors with the asset. With up to 6 digital and up to 7 analogue interfaces, the user can choose from a number of different sensors allowing operators to gather unprecedented levels of information immediately and simultaneously. Each station with TAMS can integrate optical payloads (visual and infrared), Electronic Countermeasures (ECM), Electronic Surveillance Measures (ESM), provide met-hydro and weather/ environmental data and can receive and transmit AIS data (including vessel's data).

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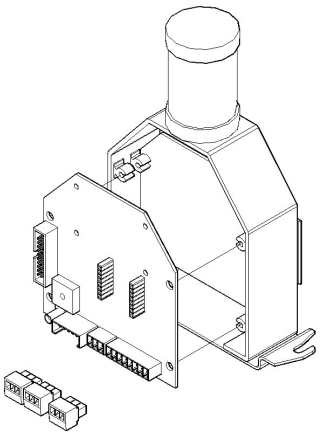
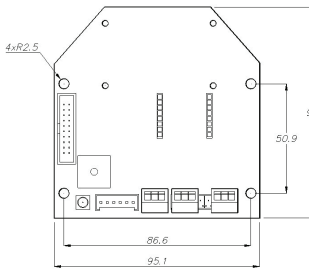
TAMS Monitor

You can manage and monitor all objects in a simple and intuitive manner using our dedicated TAMS Monitor software, smartphone app and/or web interface. The integrated software portal allows immediate access to all information, offering an effective and easy to use information management system. The TAMS Monitor uses official ENCs (S-57/ S-63) as base charts, therefore all monitored objects correspond with their ENC peers. Furthermore, the TAMS monitoring software can be used as a standalone solution or modularly integrated with the software used by the end user.

System flexibility

The system architecture of the TAMS offers unparalleled flexibility in the management and maintenance of remote assets. The compact form factor and low power consumption allows the TAMS to seamlessly integrate with virtually any platform or station. The flexibility in communication modules and configuration makes it ideal for virtually any asset, from aids to navigation to surveillance towers or offshore construction. The ability to choose from a wide range of sensor interfaces allows an operator to create the ideal solution that fits their unique needs and price points- all while vastly improving domain and environmental awareness.





Intelligent Port & Waterway Infrastructure

CONTROLLER

- High-performance, low-power Atmel® AVR® XMEGA® 8/16-bit Microcontroller ATxmega128A1-AU
- AES Crypto Engine
- Four-channel DMA controller
- Eight-channel event system
- 16-bit real time counter
- Programmable multilevel interrupt controller
- JTAG (IEEE 1149.1 compliant) interface, including boundary scan
- Program and Debug Interface (PDI)
- Flash memory: 128K+8K
- E2 memory: 2KB
- 8 KB SRAM
- Default Clock speed: 2MHz (maximum 32MHz)

GPS MODULE

- MTK MT3339 GPS Solution
- L1 (1575.42 MHz)
- 66 Channels
- Support for DGPS (SBAS, WAAS, EGNOS, MSAS,GAGAN)
- Ephemeris and almanac for GPS and SBAS output
- 1Hz output frequency (default), up to 10Hz
- Internal antenna (optional external antenna)

Accuracy Specification1

- SPS: < 3m typical horizontal (50% CEP)
- SBAS: < 2.5m typical horizontal (50% CEP)

INPUTS

- 6x analogue inputs 0-20mA (±0.1mA)
- 1x analogue input 0..30VDC (±0.1V) to measure voltage
- 1x RS485, optoisolated, with support for MODBUS RTU, ASCII (master or slave mode), 300..115200 bds
- 6x digital inputs

INTERNAL MEMORY

- Micron M25P80 Serial Flash Embedded Memory
- 8MB Flash memory
- Write cycles per sector: 100,000+
- Data retention: 20yrs+

COMMUNICATION MODULES

- NavSim 9603N Iridium satellite transceiver (Range: global coverage (including poles)

PHYSICAL CHARACTERISTICS

Size: 95x98mmx10mm
Weight: 85g

POWER CHARACTERISTICS[1]

Power input: 9-30V DC
Power consumption:

- standby: <1W
- peak (transmission): <9W
- average: 40mA @12VDC

ENVIRONMENTAL CHARACTERISTICS

Operating temperature: -40° to +85°C (-40° to +185°F)
Storage temperature: -40° to +85°C (-40° to +185°F)
Humidity: 95% non-condensing

Notes
1) Please note that power consumption will vary substantially depending on the configured reporting interval, message length, number of connected sensors, and alert threshold levels

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