

## MARK HAZARDS AND SUBSEA ASSETS

**Guardian:mark** enables you to make hazards at sea or subsea infrastructure visible to marine traffic. It takes advantage of Vesper Marine's unique design technology to enable organizations within oil & gas, energy, offshore fishing, aquaculture, marina or port sectors enhance safety of their people and assets.

*Guardian:mark* allows you to:

- Mark hazards or protection zones providing visibility to vessels
- Position marks in locations where it is impossible to install physical markers
- Add, remove or change positions of marks according to changing conditions
- Get encrypted cloud access with secure configuration from anywhere

The **Guardian:mark** solution comprises of a **Virtual AIS Station** and **Cloud Software**

## USE CASES

- Shipping channels to "join the dots" between physical buoys.
- Areas where navigation conditions change frequently. For example, overhead clearance, ice or water levels
- Offshore infrastructure such as oil rigs, oil and gas pipelines, renewable energy structures like wind, wave and tidal installations
- Near shore landing points of power cables and fibre optic cables
- Visible and invisible hazards, including bridges, piers, reefs or shellfish beds
- Moving hazards such as sand bars, towed streamers
- Temporary cordons around hazardous spills, wrecks, marine protected areas, boat or yacht races and swim events

## VIRTUAL AIS STATION

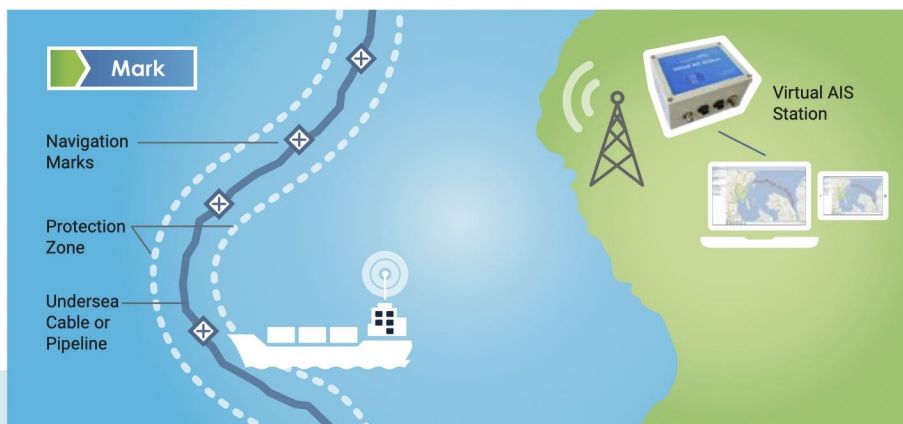
The Virtual AIS Station (VAS) is used to broadcast the location of hazard or protection zone to marine traffic. These marks are called "Virtual Aids to Navigation" (VAtoN). They are visible to vessels with AIS enabled equipment.

- Fully waterproof (IPx7) for external mounting using either mains or DC power
- Easy to install and maintain with very little user training

## CLOUD SOFTWARE

The Cloud Software is used to configure the marks

- Place up to 64 virtual marks up to 25 nautical miles away (depending on mounting height of the VAS)
- Web browser based interface makes it easy to install, setup and configure.
- Move marks or create new marks for changing conditions or requirements.
- Communication to and from your Station is encrypted for privacy and data integrity.



# GUARDIAN SOLUTIONS

	GUARDIAN: MARK	GUARDIAN: MONITOR	GUARDIAN: PROTECT
	1 Mark	1 Mark 2 Monitor	1 Mark 2 Monitor 3 Alert 4 Prevent
Virtual AIS Station	✓	✓	✓
Up to 64 virtual AIS marks	✓	✓	✓
Configure virtual marks	✓	✓	✓
Vessel traffic monitoring		✓	✓
Record and playback vessel movements		✓	✓
Create multiple protection zones			✓
Configure smart rules to trigger alerts based on vessel behavior			✓
Send automated proactive messaging directly to vessels			✓

## TECHNICAL DATA

ACCESS MODE	RATDMA, FATDMA
TRANSMISSION MODE	Type 3 AtoN operates in mode A, B or C
RADIO FREQUENCY	Dual channel AIS transmit & receive. Default AIS 161.975 / 162.025 MHz
ATON MARKS	Maximum of 64 (dependent on configuration)
MESSAGE FORMATS	ITU-R M.1371 - Message 6, 8, 12, 14, 21 (others available)
NUMBER OF TRANSMITTERS	1 x AIS
NUMBER OF RECEIVERS	2 x AIS, 1 x GPS (50 channel)
AIS RECEIVER SENSITIVITY	-113dBm
GPS RECEIVER SENSITIVITY	-142 dBm acquisition, -159 dBm tracking
POWER SUPPLY	12VDC, 5A. Includes isolated AC power pack
TRANSMISSION POWER OUTPUT	Configurable up to 12.5W (41 dBm)
GPS ANTENNA CONNECTOR	TNC connector – GPS antenna included with surface or pole mounting
VHF ANTENNA CONNECTOR	S0239 connector. 50 ohm, max 2:1 VSWR
SERIAL DATA	1 x RS232, 1 x RS422 (opto-isolated)
NETWORKING	Ethernet optional (TCP/IP, SSL)
SIZE	162mm by 122mm by 90mm high (6.32" x 4.8" x 3.54" high)
ENVIRONMENTAL	Waterproof (IPx7). Excluding AC power pack
OPERATING TEMPERATURE	-25°C to +55°C (-13°F to 131°F)
INDICATORS	Multi-color LED indicators for power, status, transmit, networking and error
COMPLIANCE CERTIFICATES	FCC, IC, CE, BSH, BABT, US Coast Guard

### Standards:

- ITU-R M.1371, Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band
- IEC 62320-2, Automatic Identification Systems (AIS) – Part 2, AIS AtoN Stations – Operational and performance requirements, method of testing and required test results
- IALA Recommendation O-143: On Virtual Aids to Navigation
- IALA Recommendation A-126: On The Use of the Automatic Identification System (AIS) in Marine Aids to Navigation Services



### DEPARENTIS

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