

# SPM Buoy Monitoring System

**A modular system capable of remote monitoring of all parameters affecting the operation of an SPM buoy**



Current oil and gas tanker day rates dictate that product loading and unloading be carried out as quickly and safely as possible within a good weather window. Seamap's SPM Buoy Monitoring System has been designed to furnish both tanker and terminal personnel with the necessary information to make an informed decision as to when the vessel should be pulled off the buoy during a deterioration in weather conditions.

The system comprises of up to 32 sensors interfaced to an electronic acquisition module, a power management system complete with batteries and solar panels and an

RF transmitter all securely mounted on the buoy. The electronics and batteries are housed to meet all explosion proof regulations. An RF receiver and central processing system is provided on shore as the central monitoring station. A hand held remote receiver allows personnel to monitor sensors from the tanker or an auxiliary vessel. The system is modular in design and can be configured to the requirements of the operators.





## Sensors



Hawser Strain



Wind speed and direction



Mooring line tension



Foghorn



Navigation light



Product Pressure



Product Temperature



Trespasser detector



System battery voltage



Sea Current, speed and direction



Wave height



Water depth



Water temperature

The most important measurement that the system displays is that of hawser shackle tension. This is measured using a single or dual in-line load cell which can be supplied complete with shackle(s) or as a pin to replace an existing shackle(s) pin. Data from the load cell and other on-board sensors is transmitted to the shore station where it is first processed then displayed on the computer monitor, printed in hard copy and logged to disk.



Handheld Receiver

### Portable Receiver

- Mobile display of data
- Powered by rechargeable batteries



Load Pins

### Load Monitoring

- Supports Single or Dual load pin
- Hawser expiry life computing



# SPM Buoy Monitoring System



## Specification

### Offshore Electronic Box

Maximum inputs	: 32
Main Processor	: Z180, 18 MHz, 256 kB memory
Data output update rate	: 15 sec (programmable)
Supply	: 12 VDC
Casing	: 316 marine grade stainless steel
Outer casing	: Aluminum Alloy rated EXD
Power Consumption	: < 1000 mA max at 12 Vdc
Radio Telemetry	
<i>(Options Include)</i>	: 450 MHz to 460 MHz 8 kHz single frequency 900 MHz Spread Spectrum 2.4 GHz Spread Spectrum
Operating Range	: > 10 km
<i>(frequency &amp; transmission power dependant)</i>	

### Power Management System

Batteries	: 2 x 12 VDC valve regulated sealed
Charging control	: PWM, over voltage, over temperature protection
Casing	: 316 marine grade stainless steel with pressure release valve
Dimension	: 50 x 50 x 140 cm
Weight	: 45 kg (excluding batteries)
Solar Panels	: Typically 2 or 3 X 75 Watts
<i>(location dependant)</i>	

### Portable Receiver

Data display	: Sealed LCD 20x4 digit display
Supply voltage	: 12 VDC
Power consumption	: 130 mA at 12 VDC
Receiver sensitivity	: Installation dependant
Frequency	: 450 MHz to 460 MHz
Dimensions	: 22.5 x 11.3 x 4.5 cm

### Shore Station

Receiver	: Installation dependant
Buoy Monitoring Capacity	: 8 maximum
Computer system	: 19" industrial PC (Windows® OS)
Software	: SPM Buoy Monitor v1.506
Monitor	: Client specified, typically 19"
Printer	: Laser printer

### Load Monitoring

Capacity	: User specified single or multiple load pins
Sensing element	: Full bridge 350 Ohm strain gauge
Output Range <i>(Preamplified)</i>	: 0 - 10 V
Strain Gauge Excitation	: 5 Volts DC nominal
Accuracy	: Greater than 1% of full

Full technical specification for any sensor configuration available on request

### Ordering Information

Ordering No: Onshore Buoy Rx System  
Part No: 01-29-0012

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