

# AMS 800

**Anchor Tension, Length and  
Velocity Measurement**

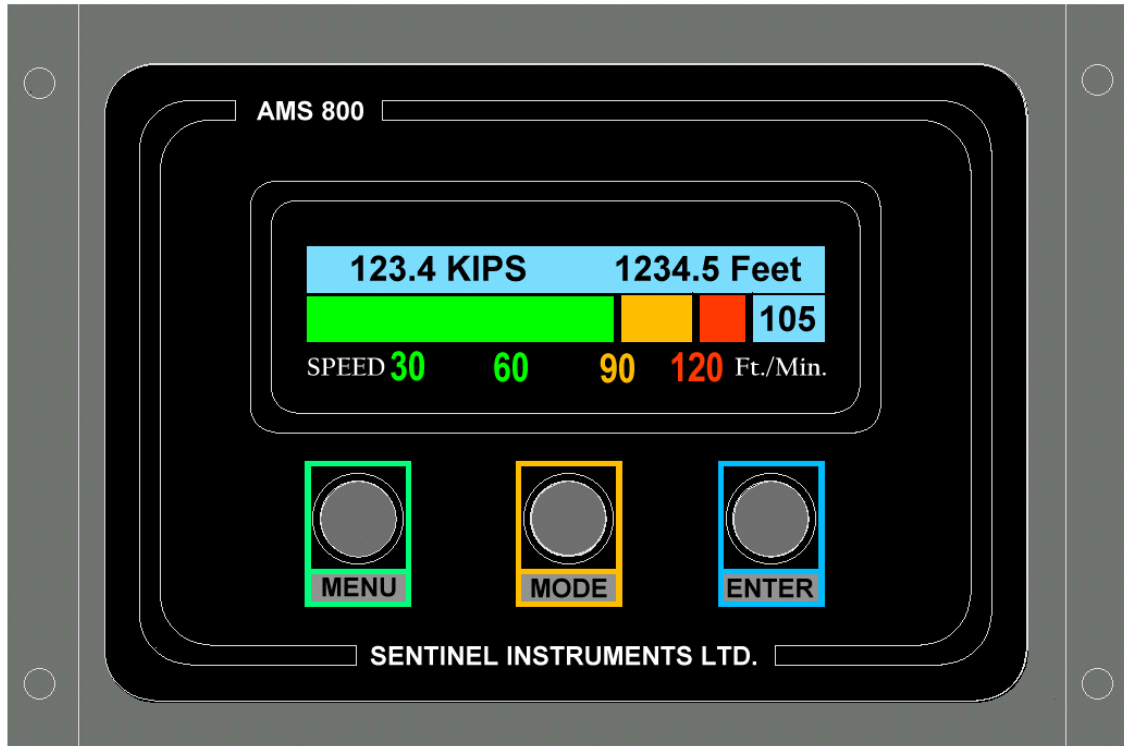
**Guarding Your Load<sup>®</sup>**

*Wireless Duplex Telemetry is Available  
for Ease of Installation and Display  
Content Integrity*

Operator friendly display with clear indication of tension of chain or cable, length paid out and velocity of payout/haul in.

The system can be configured for indication of tension only. Remote display of all values is available.

Installation and calibration is very simple and no cables are required if Telemetry is selected as an option



**SENTINEL**  
*The Load Management People<sup>®</sup>*

- Rugged Construction
- Outstanding Accuracy
- Easy Maintenance
- Simple Diagnostics
- Solid State for Reliability

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# Technical Specifications for a Chain Windlass Mooring System

## SCREEN I

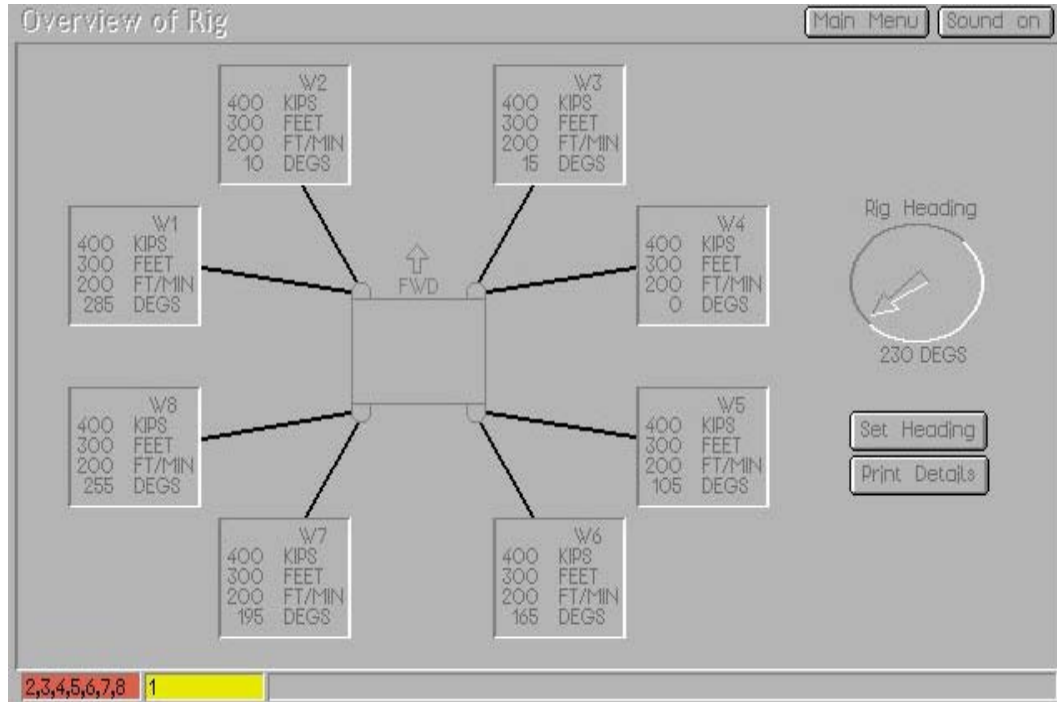


## Remote Screen Monitoring

All windlass activity can be shown in a series of screens using 15" TFT or 17" high resolution monitors.

The opening or menu screen allows access to all the screens that make up the system. Screen selection is made either by moving the mouse pointer over the required screen and pressing the left mouse button; where a touch screen is fitted simply touch the required screen for selection. Current alert/alarm status settings are always shown in the bottom left hand corner of all screens.

## SCREEN 2



### Overview Screen

Each winch station shows tension, length, velocity of payout/haul-in, and chain azimuth. Alarm conditions change lines to the appropriate alarm color. This screen also allows the user to alter the rig heading, which can be manually entered through the compass object. Selecting the alarm boxes gives access to critical monitoring screens.

### SCREEN 3



### Real Time Anchor Tension

Real-time anchor tension can be displayed in tabular form or as a bar graph. Length is displayed in digital format. Tension and/or Length, together with alarm conditions, are stored for later retrieval while recording.

Real-time chain (or rope) length can be displayed in digital form or as a bar graph similar to tension. Lengths, together with alarm conditions are stored for later retrieval while recording.

## SCREEN 4

Tension Alarm Settings
Main Menu
Sound on

	Warning		Alarms		
	Minimum	Maximum	Minimum	Maximum	
Line 1	100	350	250	650	
Line 2	300	600	250	650	
Line 3	300	600	250	650	
Line 4	300	600	250	650	
Line 5	300	600	250	650	
Line 6	300	600	250	650	
Line 7	300	600	250	650	
Line 8	300	600	250	650	KIP3

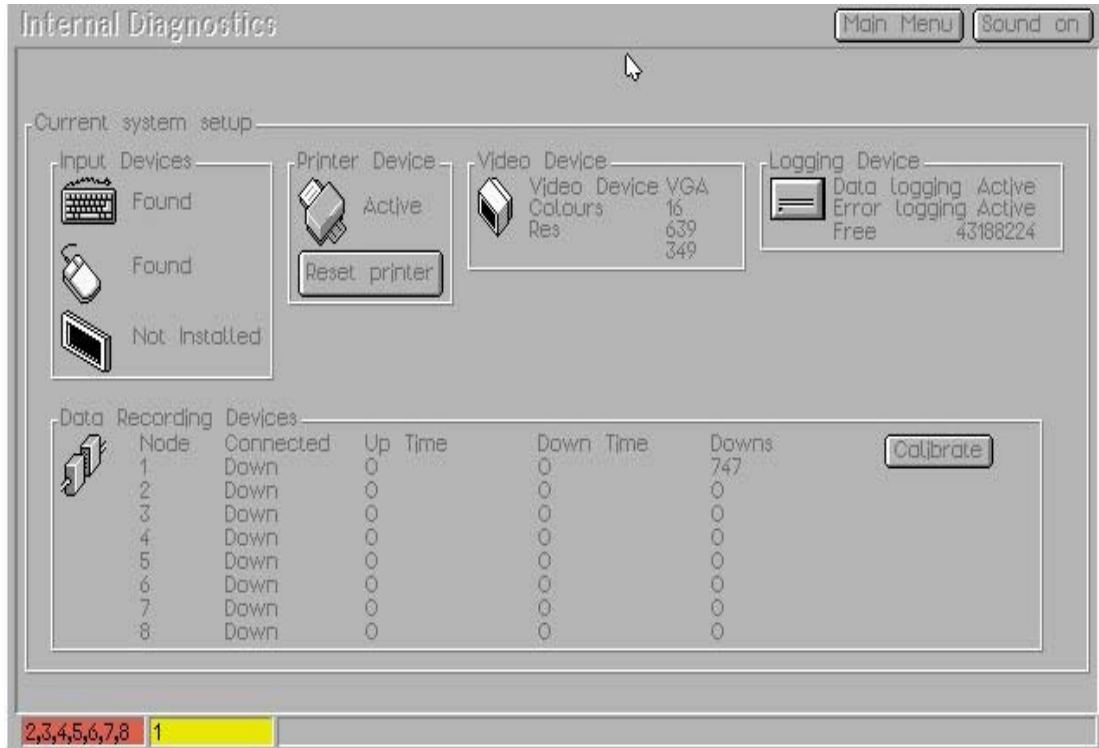


2,3,4,5,6,7,8
1
Press to alter the maximum trigger warning value for line 5.

### Alert & Alarm settings

Early warning and alarm settings can be pre-set for each winch on an individual basis for both tension and length. In addition, minimum and maximum (Lo Lo & Hi Hi) values can be set for both warning and alarm pre-set selections.

## SCREEN 5



### Real Time Diagnostics

Error tracking (should it be required) is simplified by the inclusion of a diagnostics screen. The diagnostics screen lists all the major hardware components and indicates whether they are operating. It is then a simple case of identifying the fault.

## Hardware

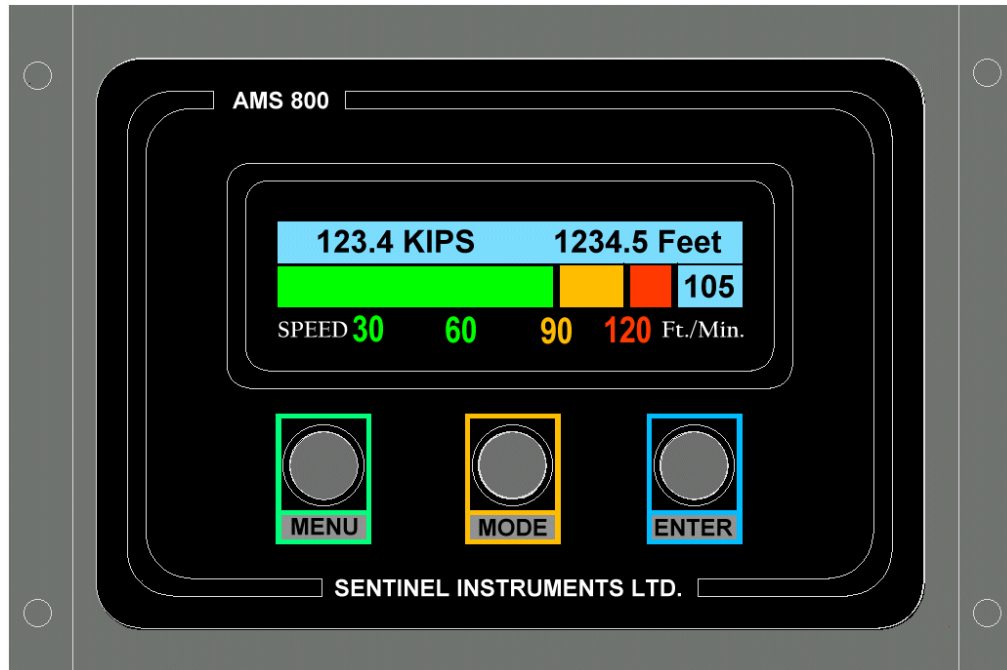
Tension can be measured in a variety of ways depending on the application, the type of winch, and the method of handling the chain or wire rope. Some examples follow.

1. A standard oil rig 3 1/2" ORQ chain winch with caisson mounted fairleaders require that the load on the forward mounting points of the winch be measured using strain gauge load cells designed to withstand the maximum and dynamic shock loads associated with this type of arrangement. It is usual to hinge the rear mounting points to minimise non-linear errors caused by back loading.
2. For chains that are locked off using a chain stopper arrangement where tension and length adjustments are only rarely made tension measurement can be made directly at the chain stopper using a load pin.
3. Where existing hydraulic load cells exist that have proved reliable in service the pressure in the cells can be read using a high quality pressure transducer that has been absolutely calibrated.
4. In the case of rope winches tension can be measured using 3 sheave running line tensiometers assuming the fleet angle is not too large for the application. In this event horizontal or vertical deck sheaves can be employed, the tension being measured by use of a load pin in one of the sheaves where a constant wrap angle is maintained.

There are of course other methods of measuring tension and each application should be considered carefully so that the correct system for the application is chosen.

Velocity and length can be measured using either proximity detectors in quadrature or absolute optical encoders depending on the application. Which ever system is employed a simple method for resetting chain or rope lengths is necessary.

## Local Display



### Tension Length and velocity

The local display gives real-time readings of tension length and velocity, when rotating. Tension can be in Tonnes, Tons, Kips and length in Feet or Meters. The display is all digital for reliability and the front panel is made of thick non-reflecting lexane. It is housed in a custom designed stainless steel enclosure with a safety cowl. The enclosure is painted with black non-glare paint and is rated suitable for deck use.

**Three Sheave for 2 3/4" Wire Rope**



The sheave pictured above gives real-time readings of line tension, payout length and running velocity when the rope is travelling. The side plates are fabricated from hi-tensile steel with a tensile strength over 700 Mpa. This combines considerable weight savings with increased strength. The shafts are manufactured from 17-4PH stainless steel.

The center sheave assembly is completely removable allowing ease of rope insertion. The center assembly consists of a load pin supporting the center sheave, two proximity sensors set in quadrature measure length and velocity. A built in amplifier conditions the load and length signals for transmission to the display. An optional universal joint tether (tie-bar) is available. The surface finish is blasted, zinc treated and powder coated, furnace baked, for extreme marine environments.