



KONGSBERG

# Operator manual

## MS1000 Stinger Monitoring System

The screenshot displays the 'Stinger View' software interface. The main window shows a sonar scan with a central 'Alarm Zone' (yellow circle) and an 'Estimated placement of 35.0 cm. pipeline' (white circle). The scan is bounded by a white trapezoidal shape. Key parameters are labeled: 'Roller Spacing' (red double-headed arrow), 'Roller Elevation' (red double-headed arrow), 'BOV Adjustment' (red double-headed arrow), and 'Reference Point' (dashed line). The scan is also labeled with 'Profiler 1' and 'Profiler 2'. A scale bar at the bottom indicates distances from 0 to 4.00 meters.

**Configurations:**

Profile Point Size:	2	px	Alarm Zone Radius:	50	cm
Pipeline Diameter:	23	cm	Roller Elevation:	110	cm
Refresh Rate:	1	s	Roller Spacing:	200	cm
BOV:	0	cm	<input type="checkbox"/> Lock Settings	<input type="checkbox"/> Audible Alarm	

**Pipe Line Location:**

- Auto Detect
- Above Sonar
- Below Sonar

***MS1000 Stinger Monitoring System  
Operator Manual***

## Document revisions

Version	Date	Written by	Checked by	Approved by
1.0	Aug 11, 2015	AZ	BC	BC

## About this document

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# 1 INTRODUCTION

The MS1000 Stinger Monitoring System is to monitor the pipe position in the stinger during the pipeline laying operation and aid the vessel operator to make proper adjustment.

The system has a pair of profiling sonar heads installed on the stinger frame so the pipe can be scanned transversally. The pipeline profile can be extracted and merged in the MS1000 software to estimate the pipe location.

This manual describes the components of the MS 1000 Stinger Monitoring System and instructions how to configure the MS1000 Stinger Monitoring System.

**Note!** Refer to MS1000 user manual, Kongsberg Mesotech document 901-10017002, for the full operation of the MS1000 software.

## 1.1 MS1000 Stinger Monitoring System Overview

The MS1000 Stinger Monitoring System incorporates the following components:

- Two 1171 profiling sonar heads
- MS1000 Processor
- MS1000 Software dongle with Stinger Monitoring option

From the MS1000 software, click the MS1000 logo to open the **About MS1000** dialog to confirm the Stinger Monitoring option is enabled.



Figure 1 MS1000 Stinger Monitoring - option confirmation

## 2 CONFIGURATION

### 2.1 Measuring Offsets

#### 2.1.1 Profiling Sonar Head Installation Locations

A pair of profiling sonar heads shall be installed  $> 1.0\text{m}$  from the pipe wall within the stinger. The sonars require unobstructed view of the pipe.

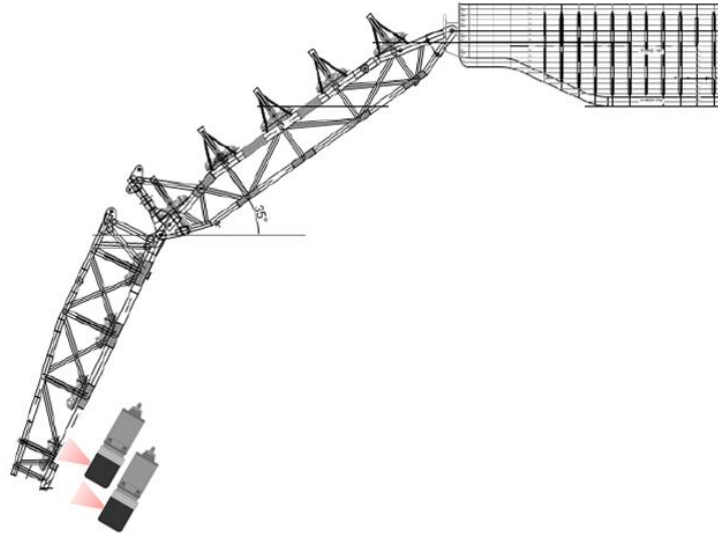


Figure 2 Side view of the stinger and profiling sonar heads

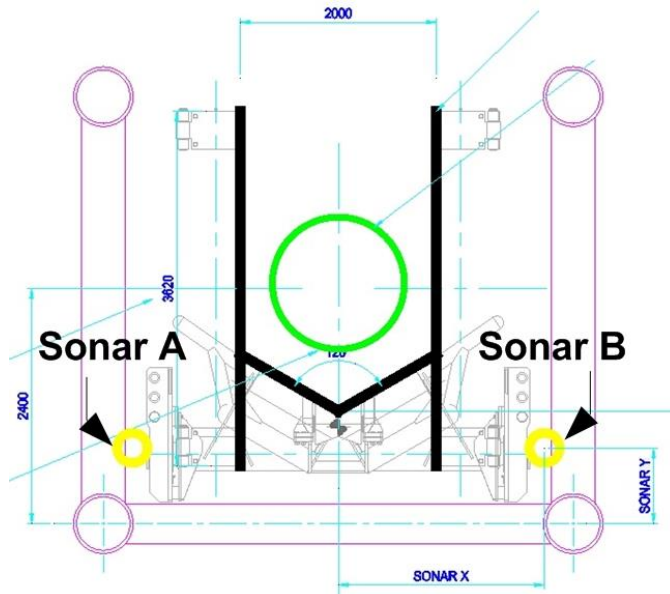


Figure 3 Rear view of the stinger and profiling sonar heads

## 2.1.2 Offsets

Select a reference point on the Trencher and measure the following offsets for each profiling sonar head relative to the reference point.

- X: Positive Starboard
- Y: Positive Forward
- Z: Positive Up
- Pitch: Positive Bow Up
- Roll: Positive Starboard Down
- Yaw: Positive Clockwise

## 2.2 Detecting Sonar Heads

Power up sonar heads, run the MS1000 software, click **Setup** tab, and then click **Connect Sonar** button.

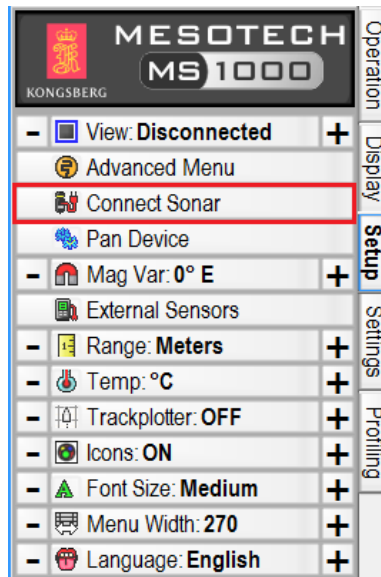


Figure 4 Control Panel – Setup Tab – Connect Sonar Button

From the **System Configuration** dialog, click the **Detect Heads** button to detect sonar heads.

After the sonar heads are detected, click on each sonar head and rename the sonar head to **PORT or STBD (Starboard)** according to their installation location. Use sonar head serial numbers for identification.

Click **OK** to complete the sonar head detection and naming.

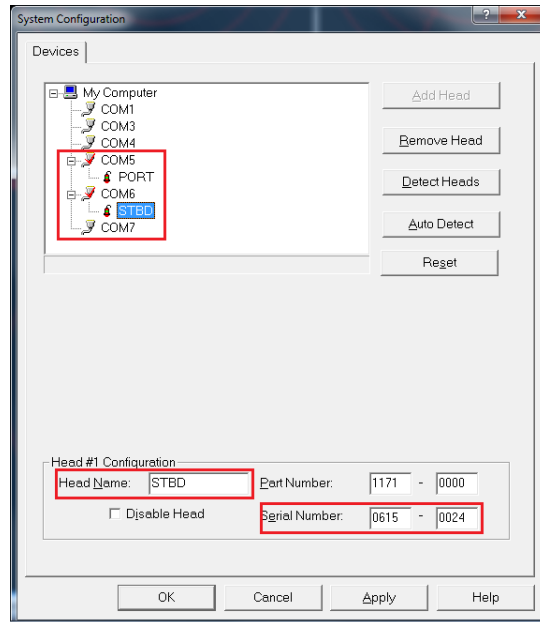


Figure 5 Sonar name assignment

## 2.3 Running Sonar Heads

Click **System** menu on the bottom right and select **Run** to start the system.

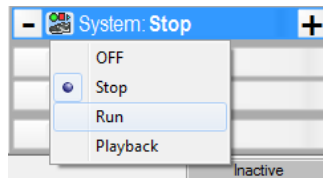


Figure 6 System operation start/stop

The MS1000 software will create one sonar display for each sonar head. The window position can be arranged freely by selecting **Display** tab, **Layout** button, and then drag a window and drop on another window to customize the layout.

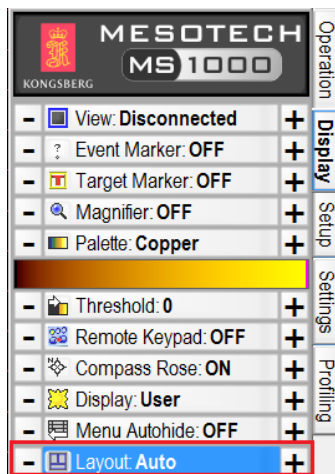


Figure 7 Control Panel – Setup Tab – Layout Button



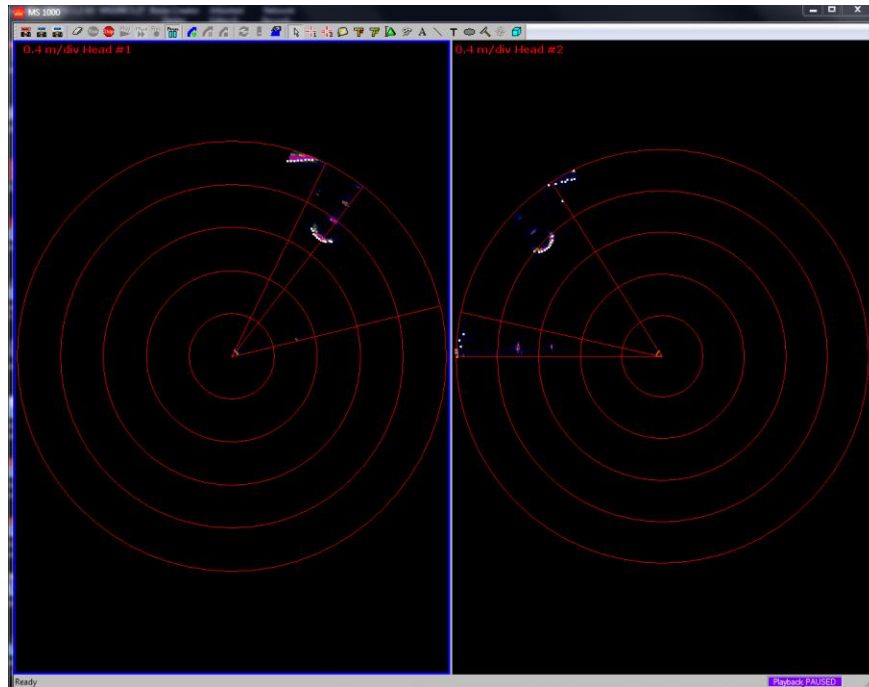


Figure 8 Example of a sonar display layout

## 2.4 Setting Offsets in MS1000 software

Right-click on any of the sonar display and select menu **Offset**.

Click on each sonar head and enter measured offsets to the **Mount Offsets** boxes, and leave the **Horizontal Mounting** checked.

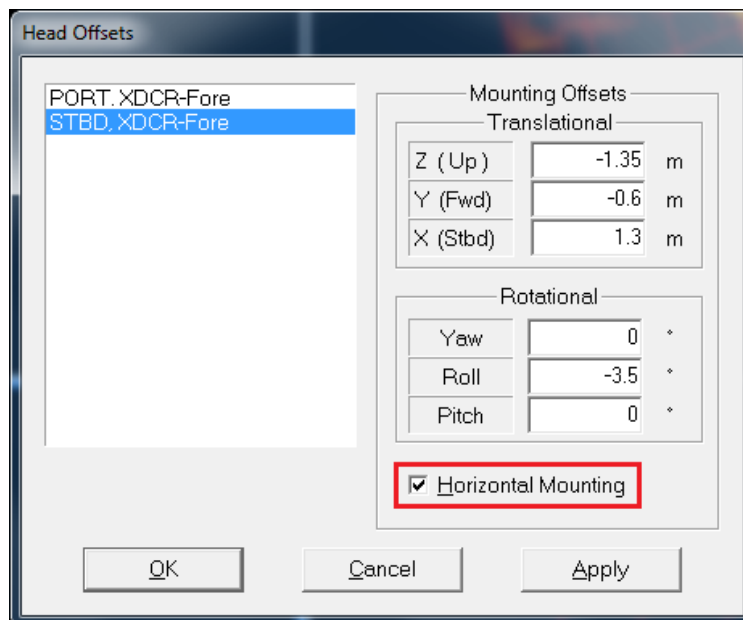


Figure 9 Profiling sonar offsets

## 2.5 Setting Sonar Orientation

The profiling sonar heads can be installed in either **Transducer Fore** or **Transducer Aft** orientation.

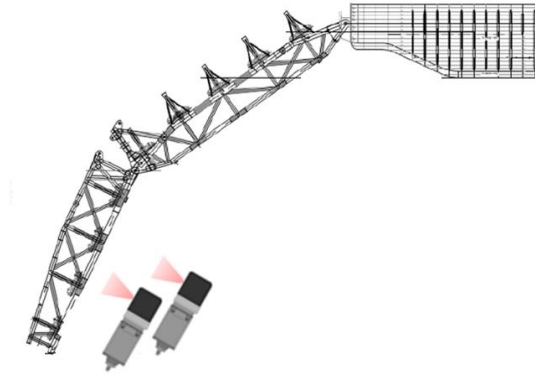


Figure 10 Transducer Fore orientation

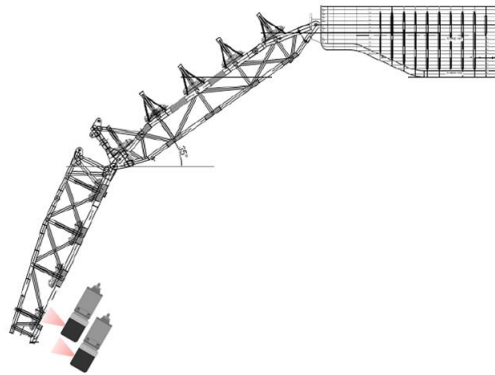


Figure 11 Transducer Aft orientation

From the MS1000 software, select the **Operation** tab, click **Orientation** button to set the orientation to match the physical installation.

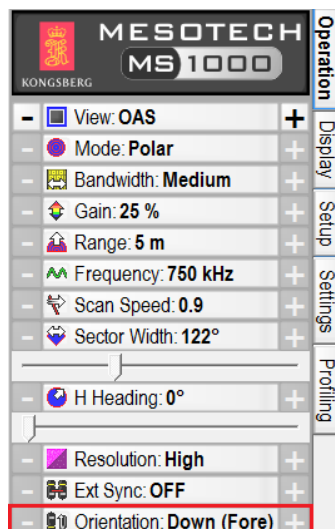


Figure 12 Control Panel – Setup Tab – Orientation Button

## 3 STINGER MONITORING OPERATION

### 3.1 Enable Stinger Monitoring

From the MS1000 software, select **Setup** tab, set **Stinger Monitoring** button to **ON** to enable stinger monitoring.

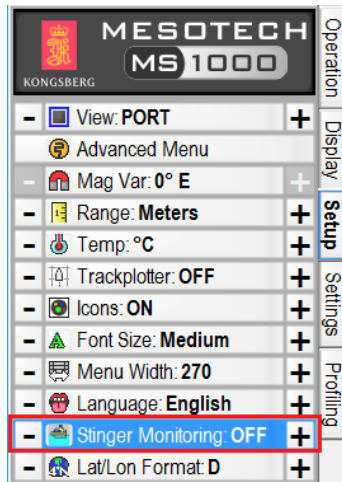


Figure 13 Control Panel – Setup Tab – Stinger Monitoring Button

### 3.2 Adjust Stinger Monitoring Settings

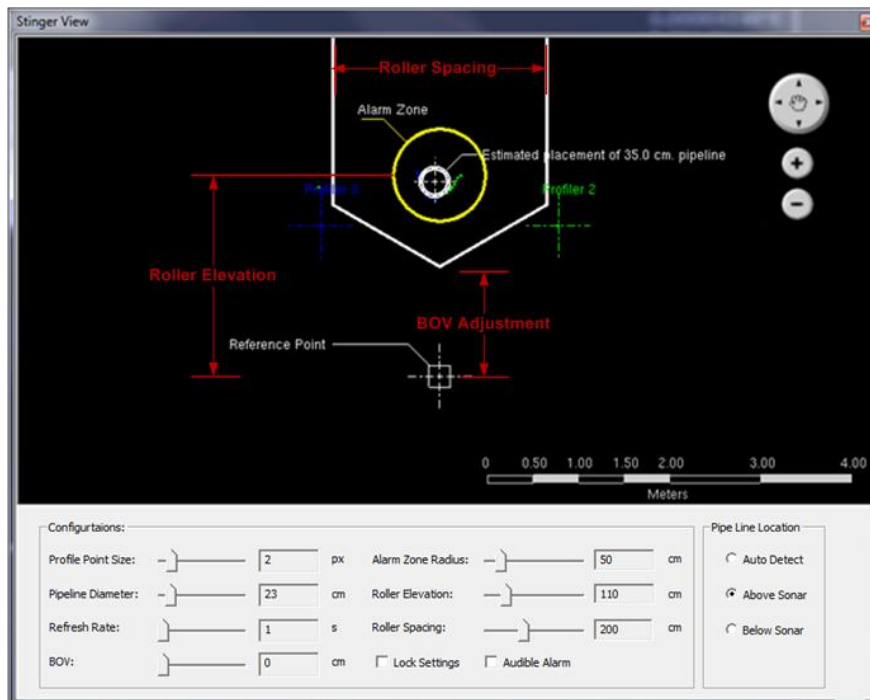


Figure 14 Stinger Monitoring Window and settings

- **Profile Point Size:** adjust the pixel size of the profile points.
- **Pipeline Diameter:** adjust the pipeline diameter between 4cm to 200 cm to match the actual pipeline diameter. Use mouse scroll key or keyboard arrow key to make fine adjustment.
- **Refresh Rate:** set the stinger monitoring window update rate.
- **BOV:** a fictive point representing the Bottom Of a Virtual “zero inch” diameter pipeline.
- **Alarm Zone Radius:** adjust the radius of the alarm zone. Audible and Visual alarm will be triggered if the estimated pipeline moves out of the alarm zone.
- **Roller Elevation:** adjust the pipeline roller elevation.
- **Roller Spacing:** adjust the pipeline roller spacing.
- **Pipeline Location:** depends on the sonar installation location, the pipeline can be either above or below the sonar. Selecting the correct pipeline location will improve the pipeline estimate. If the pipeline location is unknown, select **Auto Detect**.
- **Lock Settings:** to lock the current settings to avoid changing settings by accident.
- **Audible Alarm:** to enable/disable the audible alarm.

The operator can use the on-screen widget to pan and zoom in/out the stinger monitoring window.

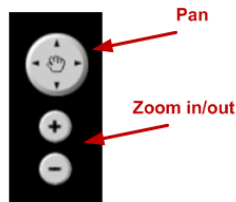


Figure 15 Pan/Zoom control widget

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