

# Support

## Technical training

KONGSBERG provides hands-on training delivered on site for groups up to 24 people. Larger groups can be accommodated on request. Refresher courses are also available.

## Repair and Upgrade Services

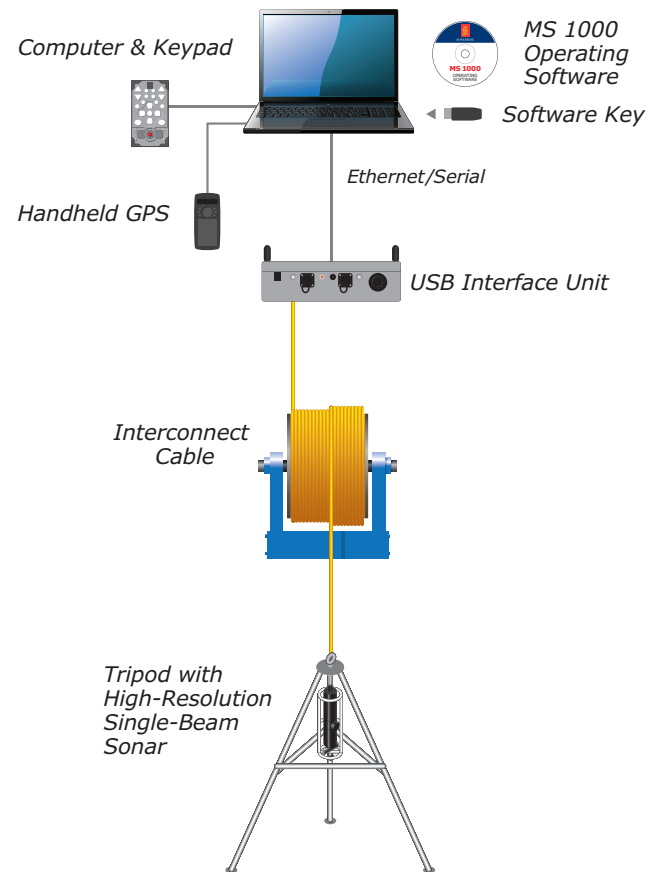
Our factory or an approved service depot can repair MS 1000 Scanning Sonar. Mid-life upgrades and re-builds are provided by the factory. Software upgrades can be downloaded from our site.

## Telephone Support

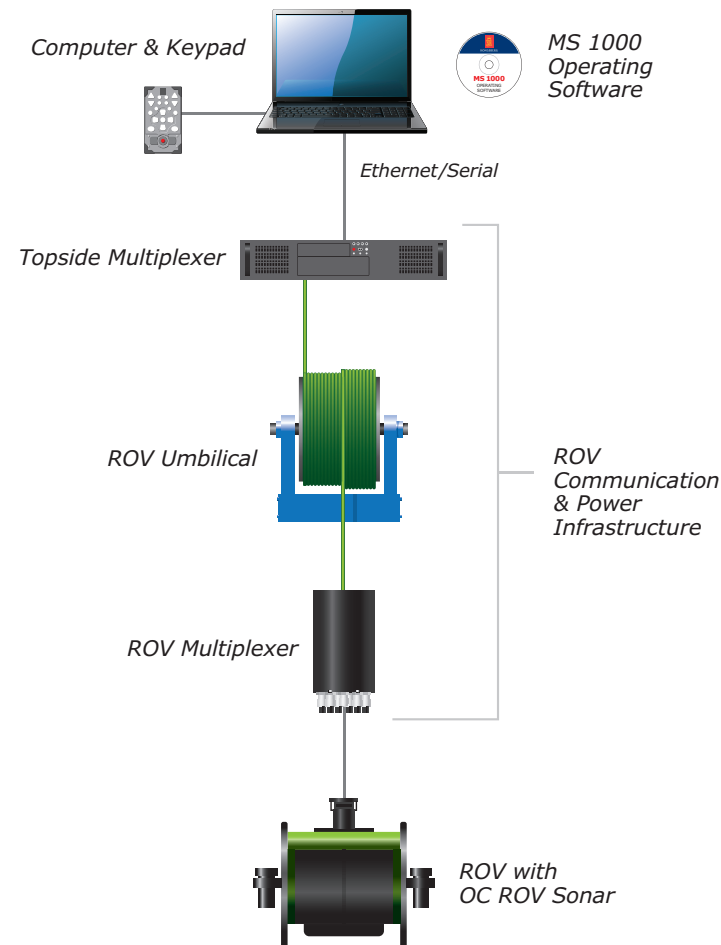
Call 1-888-464-1598 Toll Free for support during normal working hours, 0800 to 1600 hrs PST.

# Interconnect Diagrams

## SAR System Interconnect Diagram



## ROV Interconnect Diagram



# Underwater Search and Recovery Scanning Sonar



## MS 1171 Scanning Sonar and MS 1000 Software

### Description

The KONGSBERG Underwater Search and Recovery (SAR) System is widely used by first responders and law enforcement agencies searching for drowning victims, submerged evidence, downed aircraft and submerged vehicles. It saves time, increases dive safety and provides records of the search and findings.

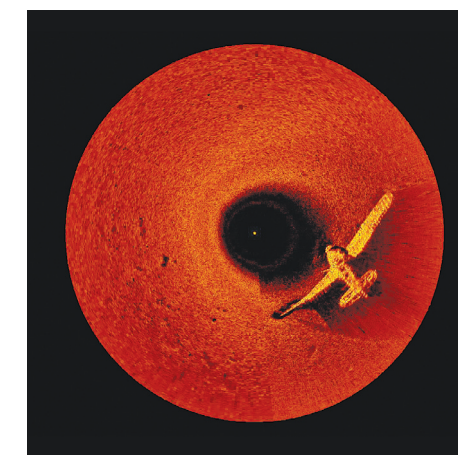


KONGSBERG SAR System

The KONGSBERG SAR System scans a radius of 30m (roughly 3000m<sup>2</sup>) in minutes after it comes to rest. The KONGSBERG SAR System may be the primary means of searching in confined areas or under ice. The system is widely used as a secondary search means to investigate targets of interest identified by other types of sonar. Targets can be flagged with GPS coordinates for further investigation by divers. It is also used to direct divers in recovery operations. Recovery operations are concluded more quickly and safely as divers can be directed to the target using underwater communications, moving

directly to the target and avoiding underwater hazards.

The SAR system consists of these basic components, a high resolution MS 1171 single beam scanning sonar, a sonar processing computer plus MS 1000 software, a power/telemetry interface, cable and a tripod mount. The KONGSBERG 1171 Series Scanning Sonar is designed to produce the highest resolution sonar images possible. It is intended for applications where data clarity and diver safety supersedes other requirements.



The MS1000 PC-based software provides control of the sonar head and real time display of sonar and sensor data when combined with a field laptop or other computer. It also enables the search team to set up and monitor grid searches and mark the locations of targets of interest. External sensor inputs from Global Positioning Systems (GPS) or Motion Reference Units (MRU) can be fed into the MS 1000 processing software for real time data recording. Annotations can be made with the use of overlays. The sonar data can also be recorded for review.



MS 1171 high resolution scanning sonar.

Copyright © 2012, Kongsberg Mesotech Ltd.

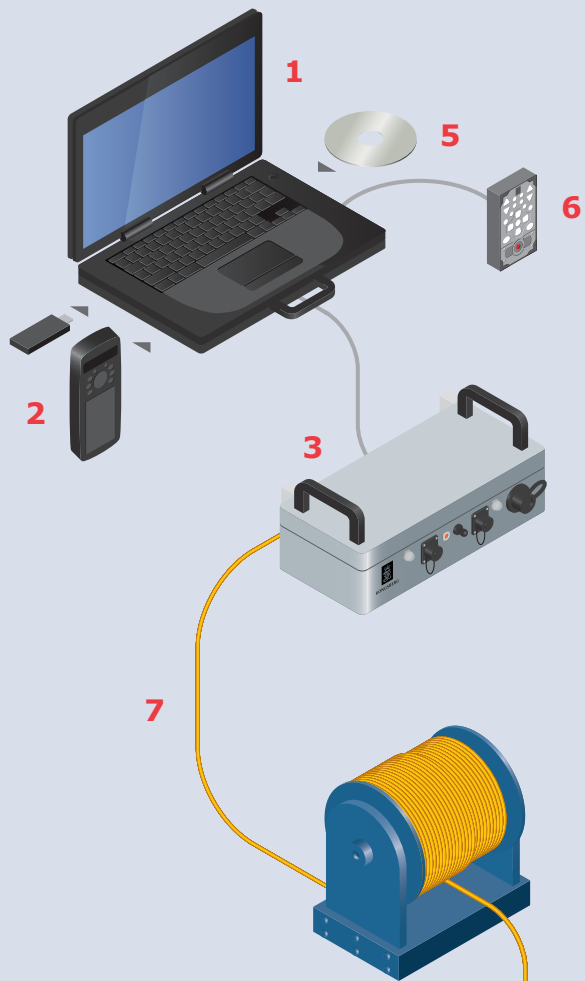
### Kongsberg Mesotech Ltd.

1598 Kebet Way,  
Port Coquitlam, BC  
V3C 5M5  
Canada

Telephone: +1.604.464.8144  
Telefax: +1.604.941.5423  
[www.kongsberg.com](http://www.kongsberg.com)  
km.sales.vancouver@kongsberg.com







**1 Field Portable Laptop PC (803-10320000)**

This optional unit provides extensive graphics processing power in a rugged field portable design with sunlight readable high resolution screen. This processor is designed for use in an outdoor search environment where direct sun can make a standard computer display unusable. Rated for the marine environment.

**2 Hand Held GPS (803-04100000)**

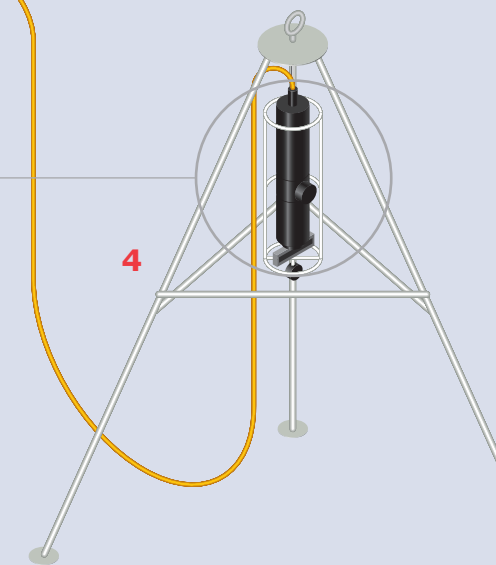
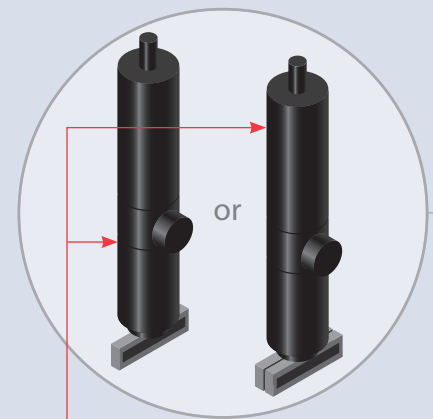
MS 1000 sonar data can be correlated with a known geographic co-ordinate or on a relative grid. GPS provides the accuracy needed for positioning scanning sonar and allows the sonar operator to determine area coverage and target coordinates.

**3 MS 1000SP USB Interface Unit (901-60240000)**

This unit provides the power and telemetry for the sonar in a splash proof housing. The interface unit accepts both AC and DC supply voltages and can be used for operation of high resolution sonar heads over various cable lengths up to 600m in length.

**4 Tripod for 675 kHz High Resolution Sonar Head**

This gimballed tripod provides a stable and level platform for deployment of the sonar head.



coordinates (latitude and longitude) can be determined when the SAR System is equipped with an optional GPS unit.

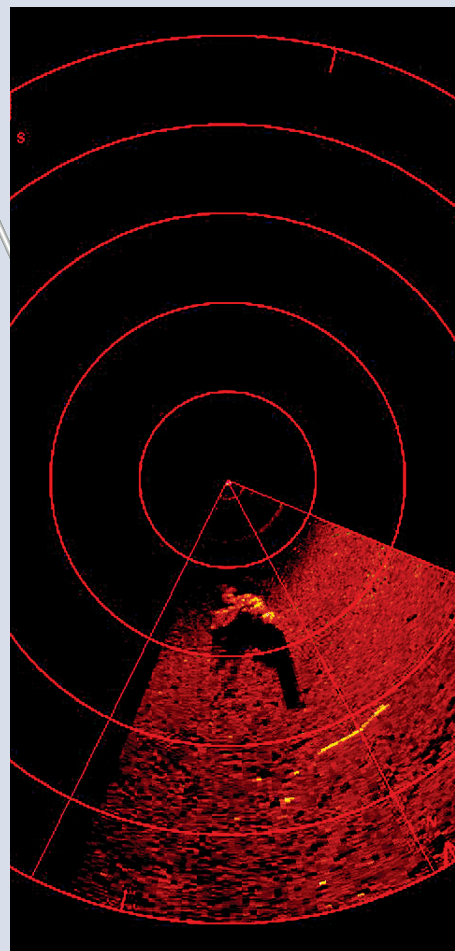
**Back-to-Back Dual Fan Beam Imaging Head (975-23510000)**

The MS 1171-Series Scanning Sonar High Resolution Back-to-Back Dual Fan Beam Imaging Head arrangement halves the scan time and doubles the update rate of the standard 975-23130000 sonar head. This sonar also employs the 675 kHz frequency sonar head with a 0.9 degree horizontal beam angle.

**MS 1171 High-Resolution Single Beam Scanning Sonar**

**High-Resolution Fan Beam Imaging Head with Internal Compass (975-23130000)**

This sonar head in 675 kHz frequency with a 0.9 degree horizontal beam angle provides high-resolution images. A compass is included in the head to provide target bearing. Target



**5 MS1000 Operating Software (701-10010000)**

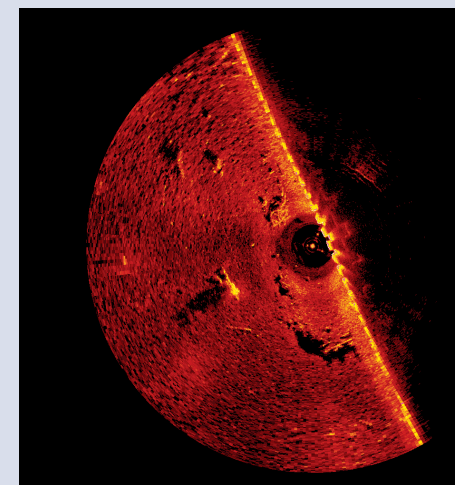
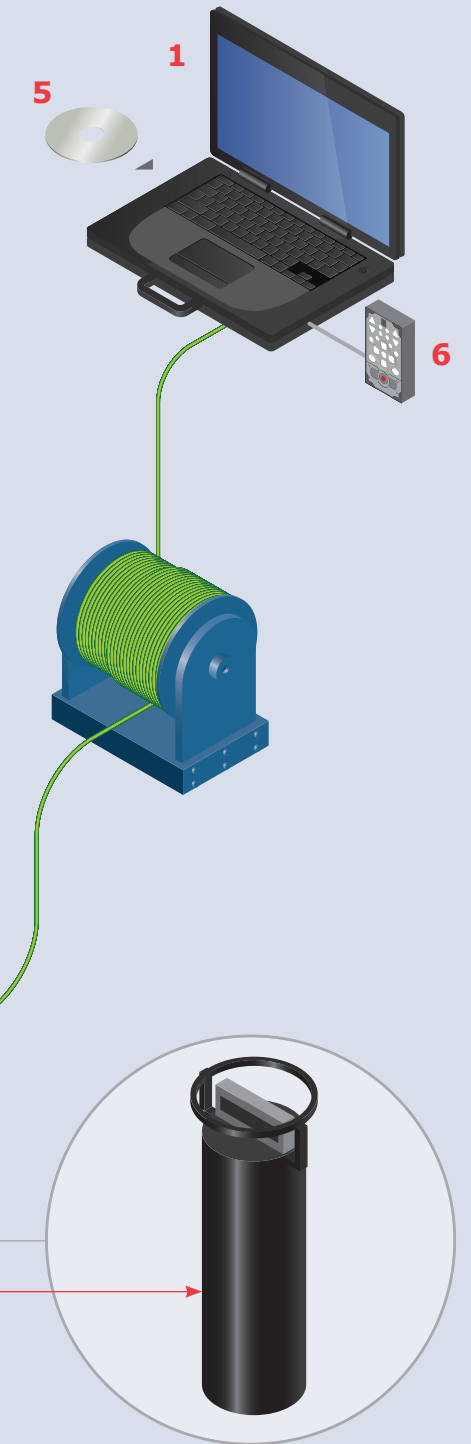
- MS 1000 software provides:
- Processing of sonar signals
  - Time tagged recording of all sonar and sensor inputs to the PC's hard drive or external recording device
  - Advanced target measurement and annotation tools
  - The capability for the user to pre-plot search and survey lines and to geo-reference sonar targets using the Track Plotter module
  - Geo-Tiff image format for geo-referencing of images
  - Compatibility with Microsoft® Windows 7 Professional & Microsoft® Windows 7 Ultimate Edition, and Microsoft® Windows XP Pro
  - Language capability - English, German, Mandarin

**6 MS 1000 Keypad (901-80020000)**

The MS 1000 Keypad is a rugged USB plug and play device that simplifies usage by enabling the sonar operator to initiate key system functions in the MS 1000 software program without the need to use a conventional keyboard or mouse. A two-button thumb joystick simulates mouse/pointer control. The rubber buttons are softly backlit for use in unlit or darkened environments.

**7 MS 1000 Kevlar Interconnect Cable (154-0270)**

The interconnect cable is a polyurethane-jacketed cable incorporating Kevlar® strength members to prevent cable damage, and a water block liner to prevent water intrusion due to minor cuts to the cable jacket. The cable provides strength and protection to the power and telemetry conductors as well as reinforcement with 3000kg of pull breaking strength. Optional cable reels assist in deployment, retrieval and storage of the MS1000 Kevlar cable. The cable reel accommodates cable lengths up to 180m. 75m is considered adequate for most SAR operations.



**OC ROV Scanning Sonar**

**Sonar for SAR ROVs (974-27010000-7801)**

The OC ROV Scanning Sonar was developed specifically for Observation-Class ROVs where size and weight are critical. This sonar head is depth rated to 650m as most SAR operations take place in inland

waters or relatively close inshore. The OC ROV Scanning Sonar head is a high-resolution sonar head operating at 675 kHz with a 1.7° x 22° beam. Power consumption is nominally 13 watts.

MS 1000 software for ROV provides a limited set of functions for the OC ROV Scanning Sonar. Power and telemetry are normally provided through connection to ROV services.