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.

SAR System Interconnect Diagram

Repair and Upgrade

Our factory or an approved service depot can repair MS1000 Scanning Sonars. Upgrades and re-builds are provided by the factory. Software upgrades can be downloaded from the Kongsberg FTP site.

Telephone Support

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

Interconnect Diagrams



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 the first responders and law enforcement agencies searching for victims of drowning, 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 approximately 120 feet (roughly 45,000 square feet) in minutes after it is deployed to the marine bottom. 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. The divers using Global Positioning System (GPS) instrumentation coordinates,

can flag suspected targets for further investigation. 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, and moved directly to the target while avoiding underwater hazards. The KONGSBERG SAR System consists of these basic components, a high resolution MS 1171 single beam scanning sonar, a sonar processing computer with the MS 1000 software, a power/telemetry interface, light weight cable reel with cable and a tripod

mount.



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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) 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.





1 Field Portable Laptop PC (803-10320000)

This optional unit provides extensive graphics processing power in a rugged, splash-proof 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.

2 Hand Held GPS (803-04100000)

MS 1000 sonar data can be correlated with a known geographic co-ordinate or to 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 is used for operation of high-resolution sonar heads over various cable lengths up to 2,000 feet.

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

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



MS 1000 software provides: to the PC's hard drive or external recording device search and survey lines and to geo-reference sonar targets Professional & Microsoft® Windows 7 Ultimate Edition, and Microsoft[®] Windows XP Pro The MS 1000 Keypad is a rugged USB plug and play device that The interconnect cable is a polyurethane-jacketed cable This cable drum is made of plastic

- · Time tagged recording of all sonar and sensor inputs

5 MS1000 Operating Software (901-10010000) • Processing of sonar signals • Advanced target measurement and annotation tools • The Track Plotter module gives the user the capability to pre-plot • Geo-Tiff image format for geo-referencing of images • Compatibility with Microsoft® Windows 8, Windows 7 • Language capability - English, German, Mandarin 6 MS 1000 Keypad (901-80020000) 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) 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 and reinforcement with 6,600 lbs. breaking strength. 8 Portable Basic Reel with **Kevlar Cable and 25ft Deck** Cable (975-80130000) and specialty rubber for a rugged, but

light weight and compact cable reel package made for the marine environment. The reel provides an efficient means to deploy, retrieve and store the Kevlar interconnect cable. A slip-ring equipped version is also available. For SAR operations 250 feet



OC ROV Scanning Sonar

650 Meter Multi-Frequency Mini Sonar Head (975-27110000)

This scanning sonar was developed specifically for the Observation Class Remote Operating Vehicles (OC-ROVs), where size and weight are critical. The sonar head is depth rated to 2,132 feet, (650 meters) as most SAR operations take place in inland waters or close inshore. The

High-Resolution Single Beam Scanning Sonar

MS 1171

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

Back-to-Back 675 kHz/900-1100 kHz Dual Fan Beam Imaging Sonar Head (975-2370000)

The MS 1171-Series Scanning Sonar High Resolution Back-to-Back Dual Fan Beam Imaging Sonar Head employs two transducers. One transducer utilizes a frequency of 675 kHz with a 0.9° horizontal fan beam. For increased resolution images the second transducer uses operator selectable frequencies of 900-1100 kHz with a 0.6° horizontal fan beam. Its design provides enhanced coverage at longer ranges when using LFM CHIRP technology.

Multi-Frequency Mini Sonar Head is a high resolution sonar operating at the tunable or user selectable preset frequencies of 625 kHz, 750 kHz or 800 kHz. Horizontal and Vertical beam width is $1.7^{\circ}x 20^{\circ}$ at 675 kHz or $1.4^{\circ}x$ 15° at 800 kHz. Power consumption is 16 watts. The MS1000 software for ROV provides a tailored set of functions for the ROV type scanning sonar. Power and telemetry are normally provided through connection from the ROV platform.