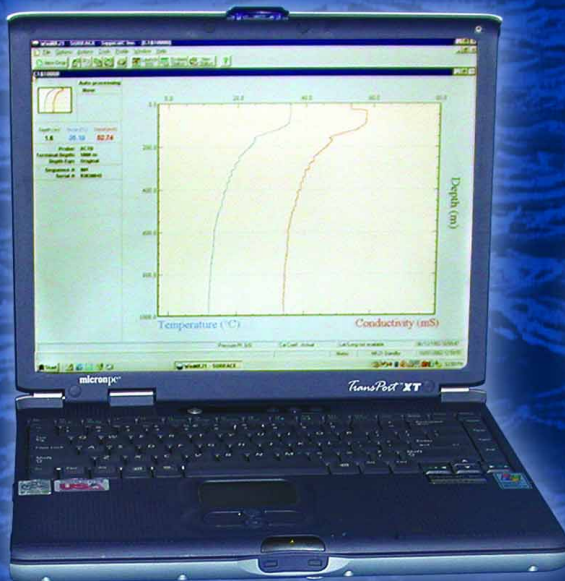NOAA Photo

LOCKHEED MARTIN

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MK21 Oceanographic Data Acquisition System
Versatile and Low Cost Capability to Collect, Display and Store Data

MK21 Oceanographic Data Acquisition System

Description

The MK21 Oceanographic Data Acquisition System is available in two configurations — ISA and USB. The MK21 ISA is a 5/8 size PC card which is installed in an ISA slot in a PC. The MK21 USB system is compatible with most laptop and desktop PC computers operating in Windows 2000, Windows XP or higher. The MK21 USB is delivered in a 19-inch rack mountable enclosure. The MK21 ISA card can be upgraded to USB with the addition of the MK21 USB Upgrade Kit. Data collection is controlled by the MK21 and the buffered I/O stores all the data until it can be read in by the operating system. Every data point is time stamped by an independent clock on the MK21 to ensure no data is lost or skipped. The MK21 also has flash memory for in system programming capability to give users the flexibility to add newly developed probe capability and firmware upgrades. The MK21 is compatible with all Lockheed Martin expendable probes and launchers.

Software developed for use with Lockheed Martin expendable probes provides a variety of data processing capabilities. Profiles of ocean characteristics may be displayed real-time in graphic form and the data permanently stored. The user may retrieve this information for further analysis in several formats to aid in a detailed understanding of the ocean environment.

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Providing oceanographers, marine scientists and ocean engineers with a versatile and low cost capability to collect, display and store data from expendable oceanographic instruments.

Operation

The operator uses the computer keyboard and display to select the type of probe to be launched and other parameters to be stored with the data such as date, time and latitude/longitude. The computer performs system diagnostics and prelaunch tests and then indicates the probe is ready for launch. It then receives probe data during the probe descent and displays and stores the information.

Data is easily translated to an ASCII text format so the user can readily generate the measured profiles using spread sheet applications or transfer data to ray path or range prediction programs.

The MK21 Software has automatic GPS input capability (NMEA 0813), selectable IGOSS and original drop rates, a new, easier-to-use display and improved post-processing options.
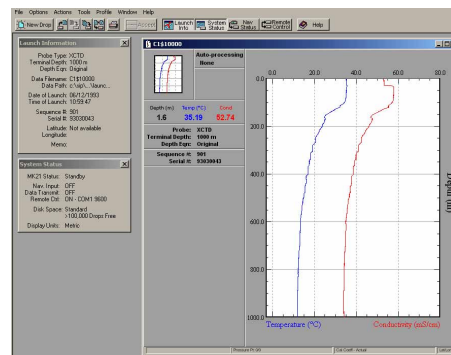
The MK21's user-friendly software can process and display data in real-time.

Features

• A highly visual, user-friendly display that utilizes the capabilities of Windows.
• Improved post-processing options.
• User-selectable features include drop rate, probe terminal depth, auto postprocessing, noise reduction, data averaging, and calculated salinity, density, and sound velocity profiles.

Kit Contents

• MK21 processor card.
• MK21 application software.
• MK21 to launcher interface box.
• Operator's manual.

System Specifications

Probe Type	XBT	XSV	XCTD	XCTD-1	AXSV**	AXCTD**
Sampling Rate	10Hz	10Hz	4Hz	25Hz	10Hz	4Hz
Vertical Resolution	60cm (18cm for T-11 FSXBT)	60cm	100cm	17cm	60cm	100cm
System Accuracy	±0.2°C	±0.25 m/sec	±0.035°C* ±0.035mS/cm ±0.05 PSU	±0.02°C	±0.25 m/sec	±0.035°C ±0.035mS/cm ±0.05 PSU
Temperature Resolution	0.01°C	—	0.01°C	0.01°C	—	0.01°C
Temperature Range	-2 to 35°C	—	-2.2 to 30°C	-2 to 35°C	—	-2.2 to 30°C
Sound Velocity Resolution	—	0.04 m/sec	0.05 m/sec	—	0.04 m/sec	0.04 m/sec
Sound Velocity Range	—	1405-1560 m/sec	1405-1560 m/sec	—	1560 m/sec	1405-1560 m/sec
Conductivity Resolution	—	—	-0.01 mS/cm	0.017 mS/cm	—	0.01 mS/cm
Conductivity Range	—	—	-20-75 mS/cm	0-70 mS/cm	—	20-75 mS/cm

System Depth Accuracy: 4.6 meters or 2% of depth, whichever is greater.
 * Nominal accuracy characterization based on XCTD horizontal profiles against a calibrated transfer CTD (each comparison used 4pt smoothing). 95% of tabulated data was within +0.035° and mS/cm of the transfer CTD.
** External RF demodulator required.