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Find the *Lockheed Martin / Sippican / ZEEMET W-9000* at our website: ***Click HERE***

W-9000

METEOROLOGICAL PROCESSING SYSTEM





ZEEMET W-9000

The Sippican W-9000 is a state-of-the-art upper air meteorological processing system capable of fully automatic upper air soundings. Pressure, temperature, and humidity values are acquired via the Sippican Mark II MICROSONDE™ and the ZEEMET™ W-9000 Processing Rack. Wind speed and wind direction data are acquired through the use of Loran-C, GPS, radar, or radiotheodolite. The W-9000 system software offers complete automatic data acquisition, graphic and tabular display of all calculated meteorological parameters, automatic selection of significant and standard levels, automatic generation of WMO and STANAG messages, the real time display of ALL reduced and raw radiosonde data, and the complete archiving of ALL reduced and raw radiosonde data.



sippican, inc.

METEOROLOGICAL PROCESSING SYSTEM

FEATURES

- **DIGITAL DATA TRANSMISSION AND PROCESSING**
- **AUTOMATED OPERATION**
- **EASY TO USE**
- **FIELD-PROVEN PERFORMANCE**
- **FLEXIBLE MODULAR DESIGN**
- **HIGH RELIABILITY**
- **REAL TIME DISPLAY OF ALL DATA**
- **ARCHIVING OF RAW AND PROCESSED DATA**

MARK II MICROSONDE

The W-9000 System is designed to receive and process transmissions from the digital Mark II MICROSONDE. The Mark II MICROSONDE provides accurate atmospheric measurements to heights in excess of 30 kilometers. A new set of data samples is transmitted every 1.2 seconds during a flight. The MICROSONDE transmits a 400 baud bi-phase digital data stream with CRC-16 error detection information for data integrity. In addition, each data sampling is sent twice to improve data capture in the event of a signal fade. Calibration information is incorporated in the data stream and is sent continuously throughout the flight. Other words of the data stream contain reference measurement information for the sensor inputs. Space is allotted for spare channels when additional sensors (such as ozone sensors, radioactivity sensors, or additional temperature sensors) are required. A synchronizing Barker word is transmitted at the commencement of each data frame for ground equipment synchronization.

DIGITAL TRANSMISSION

The digital transmission is one of the most important features of the W-9000 system. The ability to transmit and receive data without error makes it unnecessary to smooth, edit, or filter data. Quality control of the incoming data is achieved with CRC-16 error detection techniques. This preserves the time constants of the sensors and ensures an accurate representation of the atmosphere. In addition, the radiosonde transmits its serial number so that the ground station can accept or reject the transmission. This is an important feature that prevents the ground receiving system from locking-on to the wrong radiosonde or to other signals in the meteorological band.

SYSTEM DESIGN

The ZEEMET Rack and system software is purposely designed to be modular in order to facilitate future upgrades of the W-9000 system, thereby extending the system's operational life. Plug-in modules for additional or alternative windfinding techniques (such as GPS) can easily be added to existing ZEEMET Racks. Modifications to the system can generally be accomplished in the field, eliminating the necessity for expensive and time consuming procedures involved with returning the equipment to the factory.

DATA REPORTING

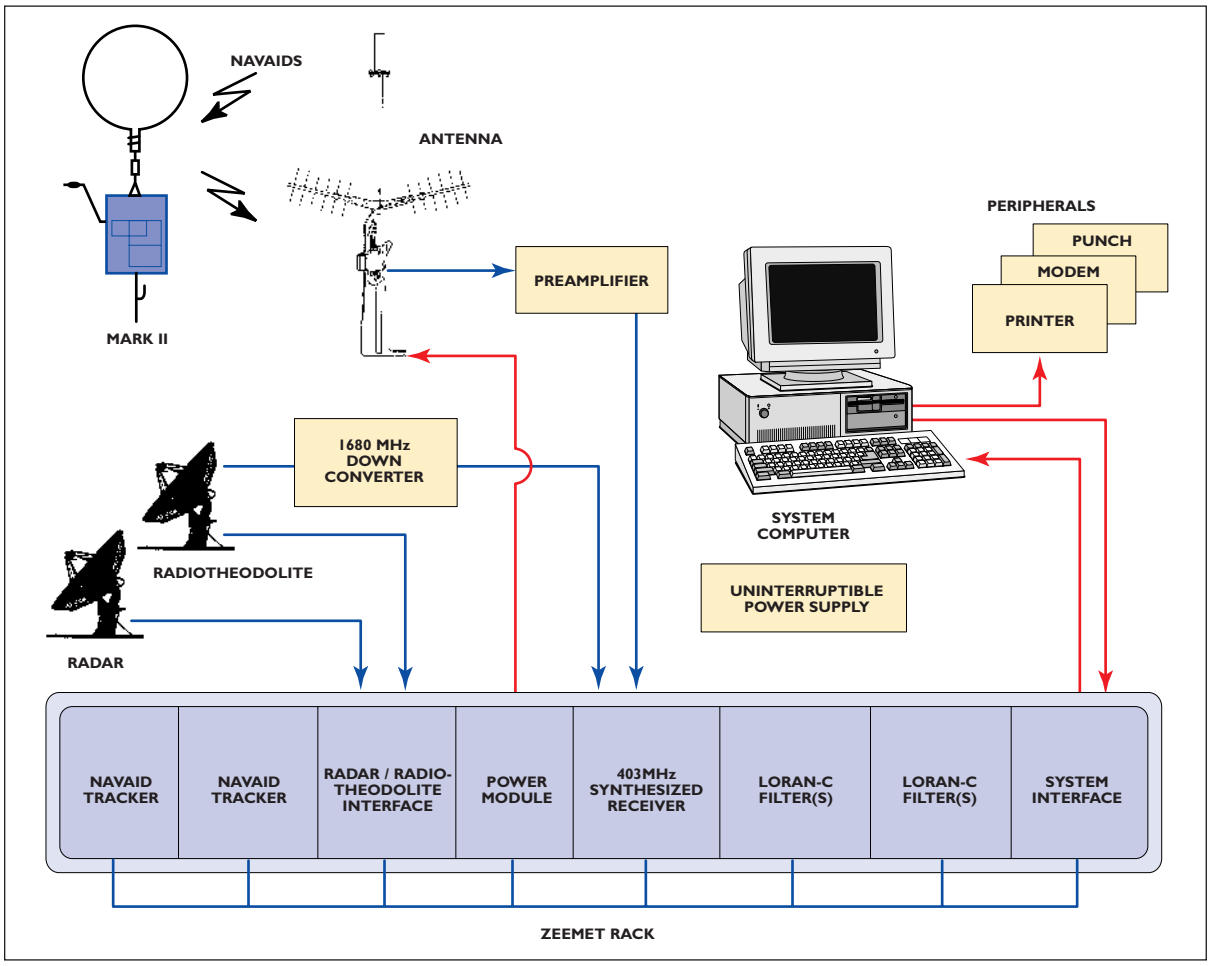
The W-9000 System offers an extensive selection of software designed to process, display, and report meteorological data. Software is available to process specialty meteorological data (such as Ozone and Refractivity), code and report meteorological messages (such as WMO TEMP, PILOT, CLIMAT TEMP, and STANAG military messages), and display and report a wide range of user selectable parameters in both graphical and tabular formats.

TYPICAL MARK II MICROSON

TYPE: BIPHASE, 400 BAUD DU

SYNC.	SONDE ID	NUMBER OF CHANNELS	FRAME COUNT NUMBER	REFERENCE	TEMPERATURE	PRESSURE	HUMIDITY	SPARE CHANNELS				CRC			
1810	108	8	112	34160	12689	8146	4424	34187	34028	8137	33804	52987	108	8	0
1810	108	8	113	8165	12689	8156	4474	34321	34185	8157	34015	12122	3877	10541	11565
				CURRENT FRAME'S METEOROLOGICAL DATA											

OPERATION OF THE ZEEMET W-9000 SYSTEM



Operation of the ZEEMET W-9000 Meteorological Processing System is outlined in the block diagram above.

Various antenna configurations are available including an Electronic Switching Antenna System for soundings to ranges in excess of 250 kms. An omnidirectional antenna system is available for low level or mobile soundings. Other antenna options include windfinding radars and radiotheodolites. Signals are passed to the synthesized receiver via a preamplifier or downconverter.

Navaid Tracker modules are used to determine sonde position. Cross-chain Loran-C operation is available.

The System Interface employs two 9600 baud RS-232 channels. The first controls the actions of the ZEEMET Rack modules using a command/response protocol. The second is for the interrupt driven output of meteorological and winds data.

The system computer controls the ZEEMET Rack modules and processes data for display and output. System operation is menu-driven. A full complement of WMO and STANAG messages are available to the user.

If the ZEEMET W-9000 system is to be used with a radar or radiotheodolite, an interface module is used to acquire data for input onto the ZEEMET Bus.

NDE DIGITAL DATA STREAM

URATION: 1 SECOND NOMINAL

CALIBRATION					REFERENCE	TEMPERATURE	PRESSURE	HUMIDITY	SPARE				CRC
1	43399	43467	17185	5669	38289	12869	8168	4541	34410	34251	8157	34015	17109
11	12	13	14	18008	34160	12689	8146	4424	34187	34028	8137	33804	52987
					PREVIOUS FRAME'S METEOROLOGICAL DATA								

ocean systems division

SPECIFICATIONS

GENERAL

Radiosonde Compatibility:	Sippican Mark II MICROSONDE series
PTU Sampling Rate:	1.2 seconds (Mark II frame rate)
Wind Measurement Methods:	Cross-chain Loran-C
	GPS
	Radar
	Radiotheodolite
System Architecture:	Microprocessor based with serial interconnections
Power Input:	110/220 V, 50/60 Hz
	12 Vdc (with inverter)
Power Consumption:	120 Watts (approximate)
Operating Temperature:	
Indoor Equipment:	0° to +50°C
Outdoor Equipment:	-40° to +55°C
Storage Temperature:	
Indoor Equipment:	-20° to +60°C
Outdoor Equipment:	-40° to +60°C
Operating Humidity:	
Indoor Equipment:	10 to 95% RH (non-condensing) (+5 to +40°C)
Outdoor Equipment	0 to 100% RH (condensing)

TELEMETRY

Frequency Range:	395 to 410 MHz
	1660 to 1700 MHz
Modulation Type:	FM
Tracking Range:	250 kms (nominal)
Telemetry Receiver:	Digitally synthesized
	Low noise (<3db)
Telemetry Displays:	Receiver Status
	Signal Strength
	Spectrum Analysis

MAIN PROCESSOR

Type:	PC, commercially available
Microprocessor:	Pentium (minimum)
Operating System:	DOS
Speed:	100 MHz (minimum)
RAM:	16 Mbytes (minimum)
Hard Drive:	200 Mbytes (minimum)
Display:	Super VGA color (or equal)
Modem:	Internal

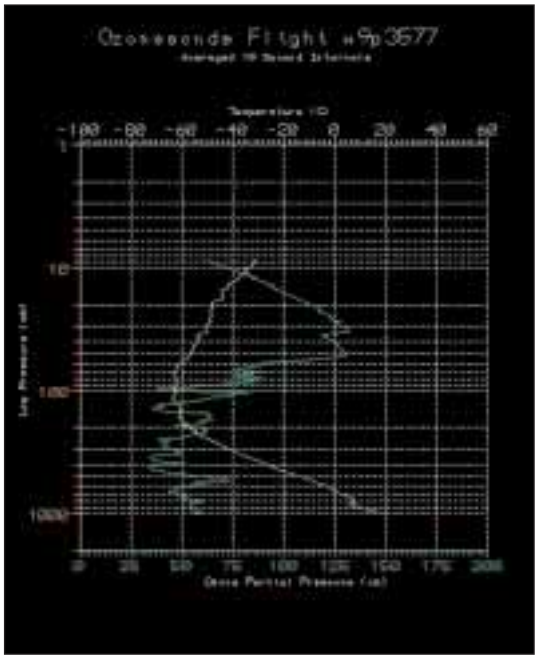
SYSTEM OUTPUTS

Output Formats:	Serial RS-232 or Hard Copy
	Customized Reports (optional)
	Customized Graphs (optional)
Messages (optional):	WMO TEMP and PILOT
	WMO CLIMAT TEMP
	STANAG
Date Files:	Meteorological Data
	Significant, Standard, Mandatory Levels
	Winds Data
	Meteorological Messages (optional)
	Index of Refraction (optional)
	Ozone Data (optional)

All specifications subject to change without notice



Sample W-9000 processed sonde data display



Sample W-9000 ozone plot

The VIZ Meteorological Systems Group of Sippican, Inc. has over 50 years of dedicated experience in the field of upper air meteorological equipment. Our background and experience in the development of radiosonde systems makes us a world leader in the market. This background and experience assures you that Sippican can provide upper air instrumentation to meet your specific requirements.

sippican, inc.

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