HANDHELD EXPEDITIONARY METEOROLOGICAL SYSTEM

FEATURES

- **Solid-State Sensors**
- **Flux-Gate Compass**
- **Digital Output**
- **Rugged PDA Data Display**

The Hand Held Expeditionary Meteorological Station (HEMS) is a COTS system used to determine surface meteorological conditions. The data can be used in a multitude of applications, both civil and military, anywhere a lightweight, rugged and durable weather station is needed.

The system consists of Climatronics' TACMET II weather station, a rugged personal digital assistant (RPDA), and Climatronics' HEMS software that runs on the RPDA under the Windows CE 2002 operating system.

The TACMET II weather station is built around Climatronics' novel Sonimometer™ wind sensor, and measures the wind speed and wind direction, air temperature, relative humidity, and barometric pressure. An internal flux-gate compass is used to automatically orient the TACMET II wind data to north.

Power for the TACMET II and the RPDA is provided from commercially available batteries. The TACMET II batteries are mounted in the handle. A single carrying case is included to house the sensor, handle, RPDA, and interface cable.

An optional tripod is available to mount the sensor when it will be used in one location for extended periods. An extended case is available to carry all of the system components as well as the tripod when this option is included.

Climatronics' TACMET II Weather Sensor System, P/N 102304 is a second-generation weather sensor, which includes a number of new features now possible with improved sensor technology resulting from our commitment to product improvement. The TACMET II incorporates Climatronics' new and unique folded-path, low-power sonic anemometer, the Sonimometer™ , with a temperature sensor, a fast-response, capacitive relative humidity sensor, a barometric pressure sensor and a flux-gate compass. An on-board microprocessor provides an RS-232C digital output.

The TACMET II Weather Sensor System is designed for maximum durability, portability, and utility, making it uniquely applicable for rapid deployment and use by one person under adverse conditions. The sensor may be mounted on a tripod or vehicle mast.

SPECIFICATIONS

PERFORMANCE:

Wind Speed

Range	0-65 m/s (0-145 mph)
Accuracy *	±0.5 m/s (1.1 mph) or 5%
Resolution	0.1 m/s (0.1 mph)
Repeatability	±0.2 m/s (0.45 mph) or 5%

Wind Direction

Range	0-360°
Accuracy *	± 5° @ wind speed > 2.2m/s (5 mph) (Including compass error)
Resolution	±1.0°

Compass **

Accuracy	±2°

Temperature

Range	-40°C to +60°C (-40°F to 140°F)
Accuracy	±2.0°C (±3.6°F)@WS>2.0 m/s (4.5 mph)
Resolution	±0.1°C

Relative Humidity

Range	0 - 100 percent
Accuracy	±3 percent
Resolution	±1.0 percent

Pressure

Range	600 - 1100 hPa
Accuracy	± 0.40 hPa or ±1.50 hPa
Resolution	±0.1 hPa

ELECTRICAL:

Measurement Format	Two orthogonal axes
Measurement Rate	2 Hz each axis
Operating Frequency	40 KHz
Signal Output	RS-232C @ 19200 BPS
Power Requirements	9.5 - 36 Vdc @ 50 mA nominal

ENVIRONMENTAL:

Temperature	-40° to 60°C (-40° to 140°F)
Humidity	0-100%
Altitude	-100 to +12,000 ft MSL

* *This accuracy is maintained when the sensor is within ± 10 degrees of vertical*

HAND TERMINAL

The RPDA is a personal digital assistant (PDA) that has been ruggedized to meet the environmental requirements of MIL-STD-810F and the EMI requirements of MIL-STD-461D. The RPDA is comparable in operation to a Compaq iPaq.

SPECIFICATIONS

PERFORMANCE

Processor:	Intel XScale 400 MHz RISC Processor
SDRAM:	64 MB
ROM:	32 MB
Operating System:	Windows CE (Pocket PC 2002)
Audio:	Loudspeaker Built In
Microphone:	Built In
Display:	Touch sensitive Transflective TFT LCD, 65,536 colors (16 bit), 240 x 320 (QVGA), 3.77" diagonal (2.26 x 3.02 inches)

INTERFACES

Serial port 115 Kbps
USB
USB (slave)
Audio input/output
Infrared Port 115 Kbps
Internal Bluetooth (Optional)
Internal GPS (commercial or military embedded)

PHYSICAL

Dimensions:	Type A -3.5"x 6.2"x 1.0" Type B -3.5"x 6.2"x 1.7" Type C -3.5"x 6.2"x 2.0"
Weight:	Type A -<14.5 oz.(411 grams) Type B -<20.0 oz.(567 grams) Type C -<23.5 oz.(666 grams)

Environmental

Altitude:	Operational 15,000 ft)4572 m) Storage 40,000 ft (12,190 m)
Operating Temperature:	-4°F to +131°F / -20°C to +55°C
Storage temperature:	-31°F to +149°F / -35°C to +65°C
Leakage:	1m of water
Environmental:	MIL-STD-810E
EMI:	MIL-STD-461D

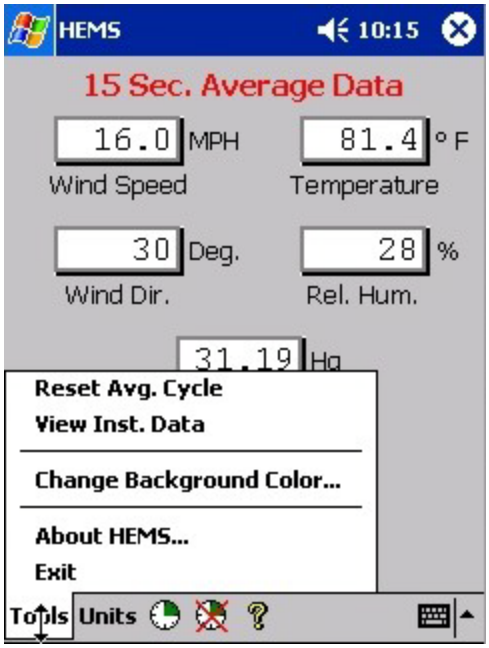
POWER

Power:	Internal Lithium Polymer, BA5800 battery accessory, AA battery accessory, AC/DC adapter GPS: PCMCIA Commercial GPS, growth to SAASM GPS

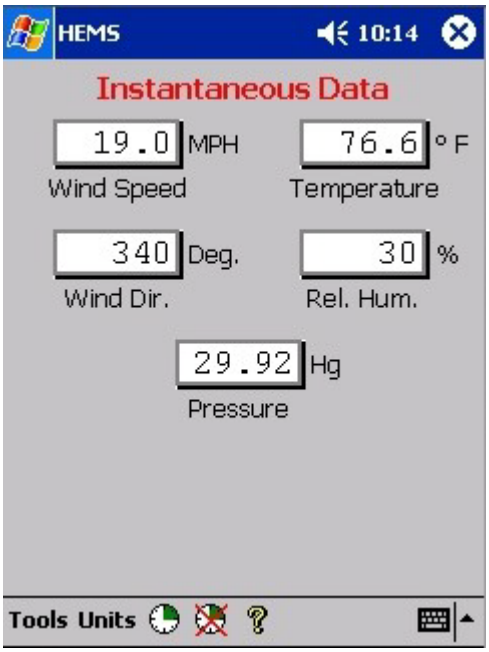
The data from the TACMET II sensor will be displayed on the RPDA with Climatronics' HEMS software, a universal display package for the presentation and archiving of meteorological data from a digital weather station. The HEMS software runs in Windows CE (2002).

The software accepts a printable ASCII serial data stream as an input. Two screens are available for the display of either the instantaneous or 15-second average data. The user can view the instantaneous input to verify proper operation and then select an

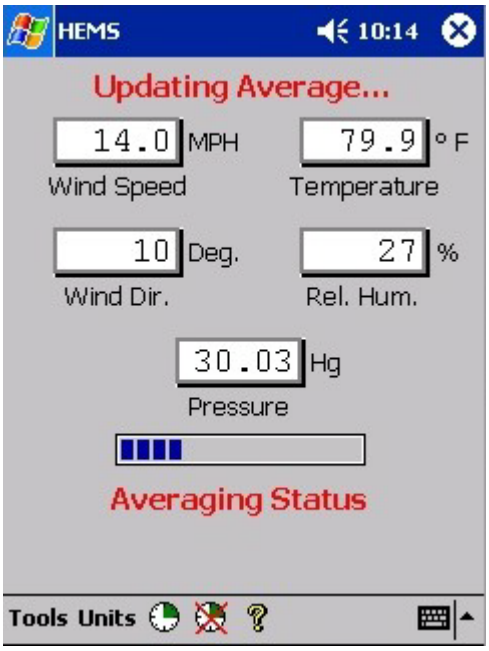
average sequence start by either using the pointer or depressing the large central control button on the front of the RPDA. The unit supplies an audio indication that each sample is being received and input to the average. Once an average cycle is completed, the data are shown on the screen. The data are held on the display until a new average is selected or the user switches back to instantaneous mode. The engineering units of the displayed data can also be changed on the fly by selecting the units desired on the toolbar.



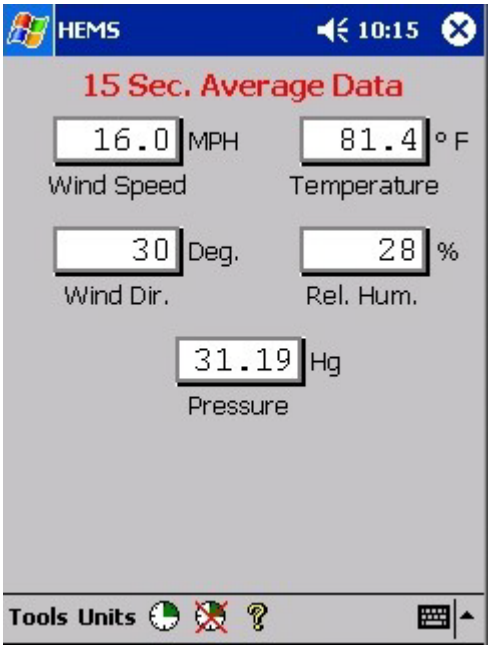
The TOOLS menu allows the user to reset the averaging period, switch to viewing the instantaneous data, or adjusting the operating background of the display for greater visibility.



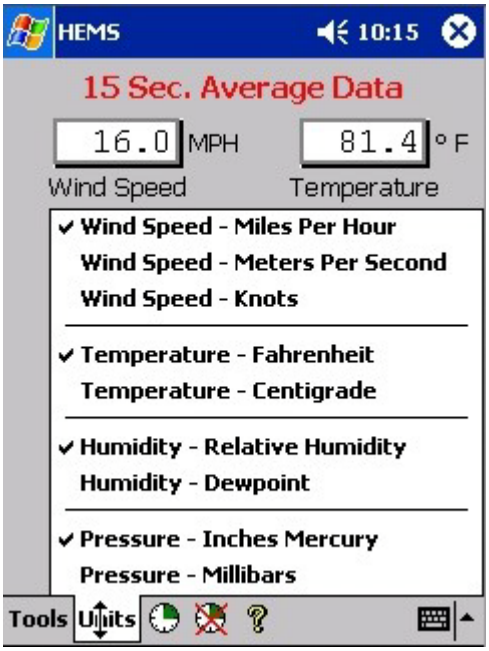
This screen is a sample of the instantaneous data transmitted from the TACMET II to the RPDA.



While the RPDA is collecting data from the TACMET II, it has a progress bar to indicate that is collecting the data. There is also an audible indicator of the incoming data.



This screen shows the 15-second average data after it has been collected from the TACMET II and processed by the RPDA.



The units displayed are user-adjustable from the menu bar at the bottom of the HEMS software screen.

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