

The **SILENT MESSENGER**

SOLAR POWERED DYNAMIC MESSAGE SIGNS

MB-9021 RADAR SPEED MONITOR

EXCLUSIVE FEATURES

Directional - Detect approaching targets, receding targets, or both

Selectable Output - Display MPH or KPH

Wide Speed Range - 5 to 200 MPH (8 to 322 KPH)

Selectable Speed Thresholds - Change message display when speed threshold is exceeded

Selectable Speed Windows - Change message display when speed falls within preset window

Target Speed Display - Include display of target speed in multiple messages

ISO 9001:2000 Certified Design and Manufacturing - The ultimate in quality assurance

Best Warranty - Five year full warranty

Application Example:

<u>Target Speed</u>	<u>Message Displayed</u>	
Less than 45 MPH	WORK ZONE AHEAD	SPEED LIMIT 45 MPH
Between 45 and 55 MPH	YOUR SPEED IS 50 MPH	OBSERVE SPEED LIMIT!
Between 55 and 65 MPH	YOUR SPEED IS 60 MPH	PLEASE SLOW DOWN
Greater than 65 MPH	YOUR SPEED IS 75 MPH	SLOW DOWN NOW!

NOTE: The above example contains three speed limit windows plus a default message that will be displayed anytime acquired target speed is less than 45 MPH. You can program up to 50 different messages to be displayed whenever an acquired target's speed falls in between the upper and lower speed limits set for that window! You can program up to 50 different windows, each with an upper and a lower speed limit! Each of these messages can include the display of the acquired target's speed.



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Harness the Power of the Sun

The **SILENT MESSENGER**

SOLAR POWERED DYNAMIC MESSAGE SIGNS

RADAR SPEED MONITOR

The Radar Speed Monitor option for the **SILENT MESSENGER** family of Dynamic Message Signs provides the capability to monitor and record the speed of oncoming traffic, compare the oncoming traffic speed to a preset speed threshold, and change the message display when the oncoming traffic speed is above or below the preset threshold. The recorded speed of the oncoming traffic can be displayed as well as a warning message. After a pre-selected time interval the message display will revert back to the original message sequence and the radar unit will continue to monitor oncoming traffic speed.

The unit is fully automatic and controlled by the computer in the main control console on the message board.

SPECIFICATIONS

ANTENNA UNIT

Operating frequency: 24.150 GHz (K-Band)
Antenna type: Conical horn
Polarization of horn: Circular
Antenna beamwidth: 12 ° typical
Capture angle: 14 ° typical
Output power: 5 mW typical

PROCESSOR UNIT

Target speed range: 5 to 200 MPH (8 to 322 KPH) typical, over a broad range of sensitivity
Speed accuracy: 1 MPH typical
Bidirectional: Detect approaching targets, receding targets, or both

SYSTEM

Detection distance: 1500 feet (automobile-size target)
Acquisition time: Time required for one foot of target travel (10 milliseconds @ 68 MPH)
Operating voltage range: 9.6 to 18.0 VDC, 12.6 VDC nominal
Operating temperature range: -40 °C to +85 °C
Compliance: This unit complies with IACP/NHTSA specifications for target channel sensitivity (DOT HS-806-191, rev. May, 1989)

Specifications subject to periodic updates as required without notice.

OTHER AVAILABLE OPTIONS

WIRELESS REMOTE CONTROL

Cellular Modem & Antenna

AUXILIARY AUTOMATIC BATTERY CHARGERS

115 VAC line powered, 45, 55 or 75 Amp

PINTLE AND BALL COUPLERS

Adjustable Height and Combination

OTHER *SolarTech* PRODUCTS

SILENT SENTINEL

Trailer and Truck Mount Arrow Boards

SILENT MESSENGER

Full-size Trailer Mount Message Boards

SILENT MESSENGERII & SILENT MESSENGERIII

Small Trailer and Truck Mount Message Boards



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Houston Radar DR500S OEM Doppler Speed Radar

Short Form Datasheet
Rev 3 April 2009



Availability: Full Production

Houston Radar's DR500S K-Band Doppler speed radar is a state of the art low power Digital Signal Processing (DSP) based OEM radar for the traffic calming market.

It is the premier product in its class available in the world.

- Lowest power industry standard radar for speed measurement
- Directional, picks up either incoming or outgoing vehicles/objects
- 1500 feet (457m) typical pickup range for a compact vehicle
- FCC pre-approved with CE mark for worldwide deployment
- Available in 24.125GHz and 24.200Ghz center frequencies for US, UK, Australian and other worldwide markets
- Fully configurable via 2x RS232 serial port for enhanced flexibility
- Wide input voltage operating range allows solar operation
- IP65 Weatherproof enclosure
- Firmware "boot loader" allows for field upgrading of firmware
- Best in class "Advanced In-Radar" traffic statistics option available
- One 600mA current sink "vehicle detect" trigger output
- Advanced self-test feature built-in



Specifications & Recommended Operating Conditions

VCC	9.6VDC min	18VDC max (21V tolerant)
ICC@12VDC	54mA min	64mA max (58mA nominal)
RF out		5mW
Freq out	24.125GHz center	±25MHz (24.2 available)
Operating °F/C	-40min	185°F/85°C max
Trigger output		600mA sink max
Comm Interface	2x 3 wire RS232	
Baud Rate	1200 to 115200 baud configurable	
Pickup Distance	1500 feet(457m) typical for compact car	
Beam Angle	12°x14°	
Polarization	Linear	
FCCID	TIADR500	
CE Mark	Yes	

Dimensions	5.5" length x 3.7" diameter (14cm x 9.4cm)
	Dims excluding mounting bosses and cable exit
Weight	1.2lb (0.5Kg) approx

Note: Pickup range will vary with target, installation and road conditions.

Range listed is typical on open road with radar mounted 5 feet above ground

IO/PWR Connection Details

Pin#	Function	Dir	Description
1	VCC	PWR	9.6 to 18VDC
2	PRI 232TX	Out	Primary RS232 TX
3	PRI 232RX	In	Primary RS232 RX
4	AUX 232RX	In	Auxiliary RS232 RX
5	GND	PWR	VDC Ground
6	AUX 232TX	Out	Auxiliary RS232 TX
7	Trig	Out	Open Drain Trigger
8	N/C	-	Do not connect
9	GND	PWR	VDC Ground

Note: Connector is male DB9.

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Radar Statistical Data Collection Operation:

All SolarTech Silent Messenger and Silent Advisor Products equipped with a MegaTech controller operating TRAFIX 2.0.1 or later and the optional Houston Radar radar gun will automatically log and record (to a standard USB memory stick) all raw data provided by the radar gun along with basic statistical and histogram information about the collected data in 15 minute intervals. The data are stored in four (4) CSV (Comma Separated Value) files which may be opened in Microsoft Excel or any other similar spreadsheet type application for viewing, manipulation and analysis. The hr_analyzer.csv file may be analyzed with the Houston Stats Analyzer Software included on the USB memory device shipped with the unit or available at www.solartechtechnology.com. Additionally, the most recent 30 days worth of Radar Statistics and Histogram Data (statistical and histogram radar data logged every 15 minutes) is maintained in the control consoles non-volatile memory and may be retrieved remotely via Control Center 3000 or via the Web Interface - see Control Center 3000 manual for further details. Three (3) files are available remotely: radar_histogram.csv, radar_statistics.csv and hr_analyzer.csv.

Data Provided is as follows:

Raw Data File: (radar_data.csv file) - (Year, Month, Day, Time, Reading) - every detection/reading - readings recorded every 250ms while tracking a target

Statistical Data File: (radar_statistics.csv file) - (Year, Month, Day, Time, # of Detections/Readings, Mean, Median, Mode, Standard Deviation, Lowest Reading, Highest Reading) - based on all detections/readings - readings are taken every 250ms while tracking a target

Histogram Data File: (radar_histogram.csv file) - (Year, Month, Day, Time, Total # Vehicles Detected and # Vehicles Detected within Each Speed Bin in 5 MPH intervals)

Houston Stats Analyzer File: (hr_analyzer.csv file) - (Year, Month, Day, Time, Total # Vehicles Detected and # Vehicles Detected within Each Speed Bin in 5 MPH intervals in a format suitable for analysis using the Houston Stats Analyzer Software)

To use the TRAFIX Radar Statistical Data Collection feature:

1. Insert a USB Memory Device into the USB Port on the back of the MegaTech Control Console. **NOTE:** the most recent 30 days worth of Radar Statistics and Histogram Data (statistical and histogram radar data logged every 15 minutes) is maintained in the control consoles non-volatile memory even if a USB Memory Device is not used and may be retrieved remotely using Control Center 3000 or the Web-Interface at any time.
2. Setup and program the unit as desired. Data logging and recording is now taking place automatically. **NOTE:** a small USB Memory Stick Icon will be displayed in the lower right-hand corner of the Control Console LCD Screen in the Manage Messages Page (Silent Messenger PCMS) or the Main Control Page (Silent Advisor RST) indicating that the radar data collection feature is active if a USB device is used.
3. Remove the USB Memory Device from the USB Port on the Control Console and insert into the USB Port on any standard PC or, if the unit is equipped with a cellular modem for remote communication, access the unit and download the desired files using either Control Center 3000 or the Web-Interface.
4. Either cut and paste or copy the four (4) CSV files to desired location on the PC and use Microsoft Excel (or any other similar spreadsheet type application) to view, manipulate and analyze the data. The Houston Stats Analyzer Software may be used to analyze the data contained within the hr_analyzer.csv file. **Note:** If the files are removed from the USB Memory Device, the Control Console will create new files upon reinsertion; however, if the files are left on the USB Memory Device, the Control Console will simply append new data to the existing files.

Houston Radar Advanced In-Radar Traffic Statistics

With Houston Radar Advanced Statistics Analyzer Windows Software

Short Form Datasheet
Rev 1 June 2006



Availability: Now

Houston Radar's Advanced In-Radar traffic statistics is a unique best in class traffic statistics gathering and storage option available in all DR series radars.

The advanced design of the statistics package allows it to track multiple targets simultaneously- a capability not possible in competing stats packages implemented outside the radar.

The Windows based Advanced Stats analyzer software retrieves and analyzes the stored data from the radar generating detailed weekly and monthly reports for counts, averages and 85th percentiles. Detailed drill down interactive graphical analysis is also available.

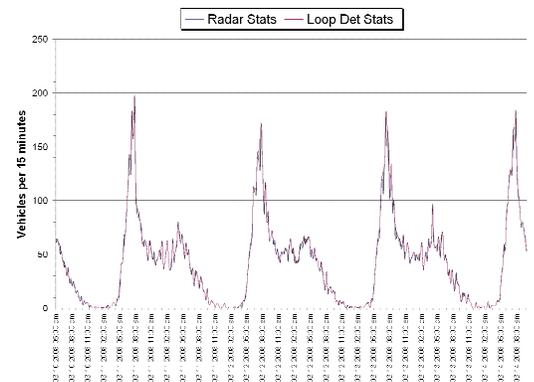
Advanced In-Radar Statistics features

- Tracking and storage inside the radar for up to 60+ days of traffic
- Excellent collection accuracy for 1 and 2 lane incoming traffic
- User selectable 1 minute to 60 minute binning and storage intervals
- Live histogram feature to monitor "live" traffic from the radar for remote monitoring applications
- Stats collection possible from either radar COM port

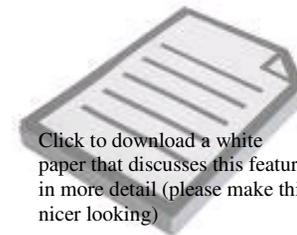
Windows Statistics Analyzer Software features

- MS Windows 2000/XP/Vista based professional quality software
- Connect to radar and retrieve data or read from file
- Store and organize data in individual projects
- Generate weekly views of hourly counts and average speeds
- Generate average monthly views by weekday hour of counts and speeds
- Generate detailed hourly counts, average speed, max speed and 85th percentile reports
- Generate interactive raw data scatter graphs of speed vs. time, counts vs. time
- Join and trim data sets to manage data effectively

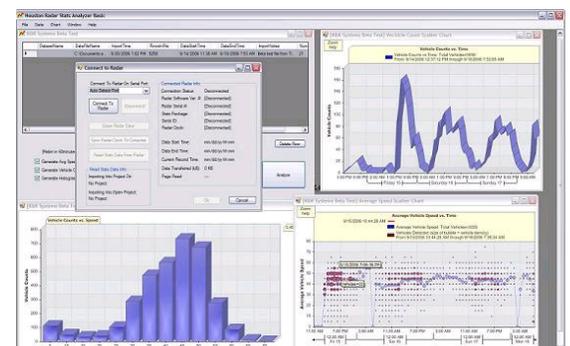
Houston Radar In-Radar Advanced Stats vs. In Road Loop Detector



Radar counts vs. loop counter



Click to download a white paper that discusses this feature in more detail (please make this nicer looking)



Stats Analyzer Screen Shot

Even though stats counting accuracy may exceed 90 to 95% in many situations, stats counting accuracy will vary with installation and road traffic conditions and should not be used where count accuracy guarantee is required. This is a more effective tool than generating stats by looking at speed data output from radar.