# The SILENT ADVISOR

# SOLAR POWERED RADAR SPEED DISPLAY

# RADAR SPEED MONITOR RADAR SPECIFICATIONS

Directional - Detects approaching targets only Selectable Output - Displays speed in MPH or KPH Wide Speed Range - 5 to 200 MPH (8 to 322 KPH) Selectable Speed Thresholds - Changes speed display when speed threshold is exceeded Selectable Speed Windows - Changes speed display when speed falls within preset window(s) Target Speed Display - Displays speed of target as desired (static or flashing) ISO 9001:2000 Certified Design and Manufacturing - The ultimate in quality assurance

**Application Example:** 

Target Speed	Speed Display	
Less than 45 MPH	Display Actual Speed Static (updated every 2 sec.)	
Between 45 and 55 MPH	Display Actual Speed Flashing (updated every 1 sec.)	
Greater than 55 MPH	Display 55 Flashing, Warning Signal or Blank Panel	

Note: There are three user definable conditions: Overspeed, Excessive Speed and Extreme Speed each with user definable parameters such as update rate, flash rate, warning message, etc. See Silent Advisor Operations & Maintenance Manual or Silent Advisor Procurement Specifications for more detailed information.



# The SILENT ADVISOR

# SOLAR POWERED RADAR SPEED DISPLAY

# RADAR SPEED MONITOR

The Radar Speed Monitor for the **SILENT ADVISOR** family of Radar Speed Displays 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 speed 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.

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, receeding targets, or both

#### SYSTEM

Detection distance: 1500 feet (automobile-size target) Acquisiton 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 MESSENGER III & SILENT MESSENGER III Small Trailer and Truck Mount Message Boards

# SOLAR TECHNOLOGY, INC.

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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 <u>premier product</u> 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 cente	er ±25MHz (24.2 available)			
Operating ° <b>F/C</b>	-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				



#### **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.

Dimensions 5.5" length x 3.7" diameter (14cm x 9.4cm) Dims excluding mounting bosses and cable exit

Weight 1.21b (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

around

13814 Sherburn Manor Dr. Cypress TX. 77429 <u>info@Houston-Radar.com</u> (Toll free) 1-888-602-3111 © 2005 to 2010 Houston Radar LLC

### 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.solartechnology.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 85<sup>th</sup> percentiles. Detailed drill down interactive graphical analysis is also available.

Advanced In-Radar Statistics features

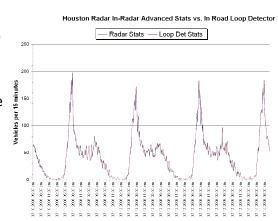
- > Tracking and storage inside the radar for up to 60+ days of traffic
- Excellent collection accuracy for 1 and 2 lane incoming traffic
- ▶ User selectable 1 minute to 60 minute binning and storage intervals
- Live histogram feature to monitor "live" traffic from the radar for remote monitoring applications
- 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 85<sup>th</sup> percentile reports

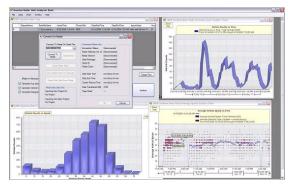
Generate interactive raw data scatter graphs of speed vs. time, counts vs. time

> Join and trim data sets to manage data effectively



Radar counts vs. loop counter





## 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.

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