



# SI-3™

## System Interface 3



**User's Manual**  
Rev 8/6/2013  
Not intended for use in Canada





# **SI-3<sup>TM</sup>**

**System Interface 3**

## **User's Manual**

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## Welcome To Decatur Electronics, Inc.!

Thank you for choosing this Decatur Electronics product—the System Interface 3 (SI-3)™, a highly advanced directional radar unit that will reward your department with years of dependable service. The SI-3™ incorporates high performance and long range, with many leading features. We urge you to study this manual before using the SI-3™ so you can maximize the benefits of this sophisticated radar device. We believe you will be pleasantly surprised by the features and advantages.

If you are as pleased with its performance as we think you will be, ask your Decatur sales representative about other Decatur products including the Genesis™ line of radars, the Onsite™ line of speed trailers, dollies, pole signs and the Responder™ line of in-car video systems.

Try any one of our products and see if you don't agree that it is the best-in-class!

—The Management and Staff at Decatur Electronics

## About This Manual

This manual contains valuable information to help you set up, use and maintain your radar, so you can optimize its life and keep it at peak performance. Please take a moment to read through it, and keep it handy for future reference.

### Note the following symbols in this manual:



Indicates a warning message about safety precautions. Please read it carefully.



Indicates a helpful tip or precaution to note.

## 1. Safety Information

All service needs should be referred back to the manufacturer.



### WARNINGS

- Do not over voltage the radar - it can damage the unit!
- The SI-3™ is designed to operate off of conventional +12 VDC (+10.8 to +16.5 VDC) from the serial cable.

## Important Warnings



- Opening the SI-3™ automatically voids any warranty still in effect. There are no user serviceable parts inside.
- Do not expose the SI-3™ to excessive moisture. Never submerge the device.
- Do not drop the SI-3™ on hard surfaces since damage could occur. Units damaged by dropping or abuse are not covered for warranty repair.

Violation of these guidelines may void the warranty.

## 2. Receiving Inspection

- When you receive your SI-3™, inspect it for any freight damage that might have happened during shipping or unloading. Take pictures to document any damage.
- Notify the freight company immediately of any damage, preferably while the driver is present. Record the damage on the bill of lading and keep a record of the problems or damage.
- The package should include the following pictured items along with this User's Manual.



**SI-3™**



**S785-1-0**  
Programming Disk



**S900-34**  
Tuning Fork



**S769-127-0**  
Optional - Programming cable



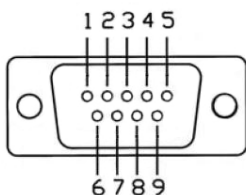
### 3. Getting Started

#### 3.1 Introduction

The SI-3™ is a radar specifically designed to measure speeds and export that speed information as RS232 data via the attached serial cable. This allows the SI-3™ to be used for a wide range of applications such as Radar Speed Trailers, traffic speed data collection (when used with the Decatur EZ Stat™ data logger) or other uses where speed monitoring is desired. The SI-3™ comes with a Programming disk that allows the user to configure certain parameters of the SI-3™ for specific applications. Refer to Chapter 4 for configuration information. Additionally, a Radar Monitor program is also available that allows you to display speed information on your computer and record that information to a text file for analysis.

#### 3.2 Connecting the Serial Cable

The SI-3™ operates off of +12VDC and is equipped with a specialized DB-9 serial connector that contains provisions for powering the unit. When connecting the cable it is important to understand that unlike standard RS232 serial connectors that have no +12VDC provisions the SI-3's™ serial connector has two pins dedicated to B+ and ground for the purpose of powering the unit. Figure 3.2 shows the pin arrangement.



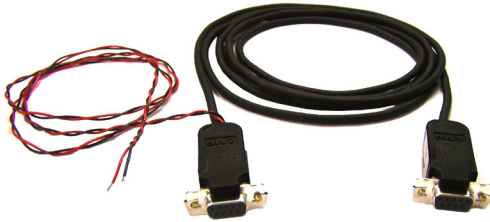
**Figure 3.2**

Front view SI-3™ Serial Connector

- Pin 1 = +12VDC (power) (red wire)
- Pin 2 = RS232 TX (white wire)
- Pin 3 = RS232 RX (green wire)
- Pin 4, 6, 7 = N/C
- Pin 5 = RS232 Ground (brown wire)
- Pin 8 = Remote ON (blue wire)
- Pin 9 = Ground (power) (black wire)

### 3.3 Optional Programming Cable

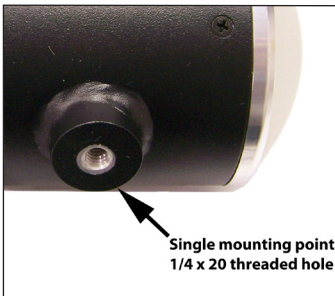
For configuring and testing purposes a programming cable is available. The cable is designed with two DB-9 connectors and a black and red wire for supplying B+ and ground to the SI-3™. One end of the cable plugs into the serial port of a computer and the other end into the SI-3™. The same end that plugs into the SI-3™ has a red wire that is connected to +12 VDC and a black wire that connects to ground. A regulated power supply can be used to supply the +12 VDC. Once the programming software is installed on the computer then the SI-3™ can be accessed and parameters changed to meet your application. Refer to Chapter 4 for programming information.



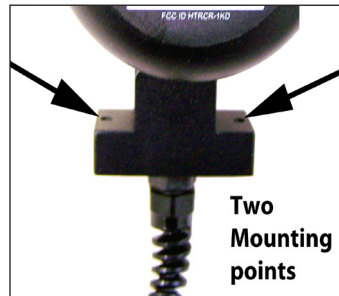
**Figure 3.3**  
Optional Programming Cable

### 3.4 Mounting Configurations

The SI-3™ can be purchased with two different mounting bases. When ordering choose the mount that best fits your application. The two options are shown in Figures 3.4a and 3.4b.



**Figure 3.4a**  
S785-30-0 (3 foot cable)  
S785-40-0 (6 foot cable)



**Figure 3.4b**  
S785-20-0 (2 foot cable)

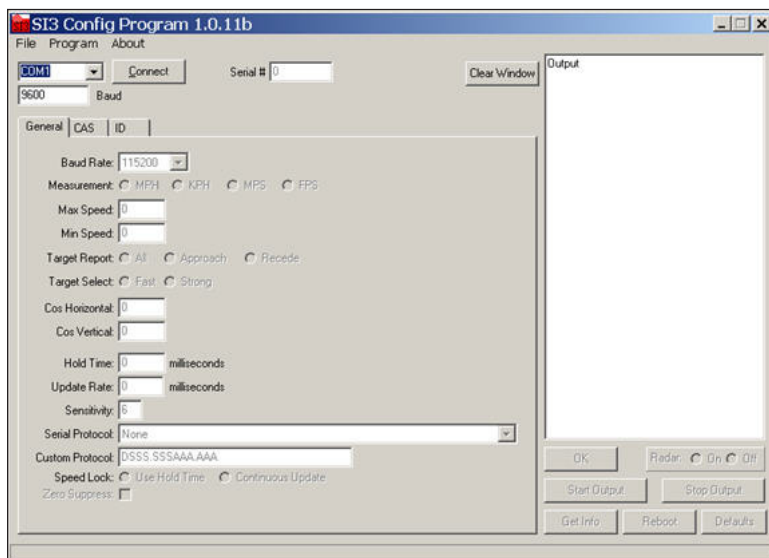
## 4. Configuring the SI-3™

### 4.1 Equipment Needed

- SI-3™ radar device
- SI-3™ Programming cable (S769-127-0)
- PC with either a usable RS232 serial port or a USB-to-RS232 adapter.
- RS232 cable to connect between the Power and Communications adapter and the PC (if needed). This cable is a 9-pin RS232 cable with a male connector on one end and female connector on the other.
- SI-3™ configuration CD (S785-1-0)
- 12V power supply

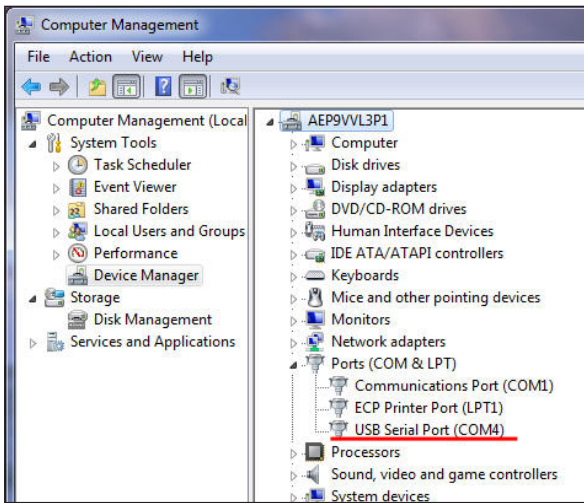
### 4.2 Device Configuration

1. Apply 12VDC power to the SI-3™ through the programming cable. Open and run the SI-3™ Config (configuration) program; the opening screen is shown in Figure 4.2a.



**Figure 4.2a**  
Opening Screen

- The SI-3™ is designed to be connected to the computer's serial port. However if you do not have a serial port and are using a USB to Serial adapter make sure the adapter has been installed per the instructions that came with it. Next, connect the SI-3™ to the computer through the adapter and check the Device Manager, Ports. The port assignment will appear as "USB Serial Port". Note the port assignment. The example in Figure 4.2b shows that Port 4 has been assigned. Your port assignment may be different and the port assignment can change the next time the USB to Serial adapter is plugged in.

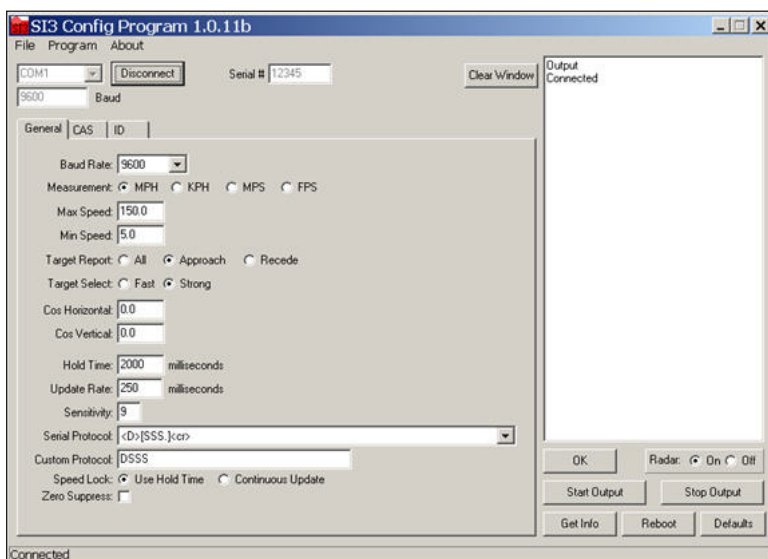


**Figure 4.2b**  
Device Manager screen

- From the Configuration Program screen select the COM port that your PC has assigned. If you are connecting through the computer's serial port, it will normally be "Com 1" or "Com 2". If you are using the USB to Serial adapter, use the port shown in Device Manager/Ports.
- Change the baud rate if necessary – the SI-3™ default baud rate is 9600. Press the **"Connect"** button near the top of the window. SI-3™ Config will query the RS232 line to see if an SI-3™ is connected to the computer. If it responds with the "Unable to

connect" message in the status bar on the bottom of the window you need to check your connections between the PC and the SI-3™.

- If SI-3™ Config is able to connect to the SI-3™, the screen will appear as shown below in Figure 4.2c. In this screen the information that appears accurately depicts the present configuration of the SI-3™. Any changes made to the SI-3™ configuration are sent and stored in non-volatile memory. If you turn off the SI-3™ unit while the SI-3™ Config program is connected, just press the "Disconnect" button and reconnect.



**Figure 4.2c**  
Connected

Any grayed-out box such as the serial number box is for reference only and cannot be changed. The "OK" button sends an OK command to the device which then responds with the message "OK". This feature can be used to check communication status at any time.

The "**Defaults**" button sends a command to put the configuration back to the factory default settings. If you have changed the baud rate and have then pressed the Default button and suddenly find that the SI-3™ will no longer respond to commands; you need to reconnect at 9600 baud before you can change the SI-3™ back to your desired baud rate. The "**Get Info**" button retrieves the present configuration from the SI-3™ and updates the displayed configuration. This command can be used to resync the SI-3™ Config program with the SI-3™ if you've power-cycled the SI-3™ while it was connected to the SI-3™ Config program.

### **4.3 Configuration Notes**

With the exception of baud rate, all changes occur immediately and do not require a reboot of the SI-3™ to become operational. When baud rate is changed it takes effect the next time the SI-3™ is power-cycled.



- *Please wait 2 seconds after the last configuration command before disconnecting the power to allow the SI-3™ to record the setting in flash memory.*

### **4.4 Baud Rate**

The "*Baud Rate*" can be 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 bits per second. The SI-3™ always uses 8 bits, no parity, and one stop bit for its serial port configuration.

### **4.5 Measurement**

*MPH* = miles per hour, *KPH* = kilometers per hour, *MPS* = meters per second, and *FPS* = feet per second.

### **4.6 Min/Max Speed**

No vehicles will be reported outside the minimum and maximum configured speeds.

### **4.7 Target Report**

The Target Report has three selections. Choosing the "*All*" selection will display vehicle speeds coming towards or away from the SI-3™.

"Approach" will show vehicle speeds coming towards SI-3™, and "Recede" will show vehicle speeds going away from the SI-3™.

#### **4.8 Target Select**

A Target Select value of "Strong" is the standard SI-3™ configuration. Changing to "Fast" will report the fastest vehicle seen within the range of the SI-3™.

#### **4.9 Cosine Horizontal and Cosine Vertical**

For bridge-type installations where the SI-3™ is over the traffic and pointing slightly down, the vertical angle can be entered here to ensure that the SI-3™ calculates the correct vehicle speeds. For installations where the SI-3™ is at a significant angle from the road, the horizontal angle can also be configured. These two may be used together. **Keep the angles between 0 and 45 degrees for maximum accuracy.**

#### **4.10 Update Rate**

The selected message format will be sent in whatever time interval (in milliseconds) that you set. The "Update Rate" can be as low as 20 milliseconds. The number should be a multiple of 20 milliseconds. The "Update Rate" and the amount of serial port activity do not affect the measurement accuracy of the SI-3™.

#### **4.11 Hold Time and Speed Lock**

When the "Speed Lock" is configured as "Use Hold Time", the "Hold Time" value indicates the time the vehicle speed is displayed after the vehicle moves out of range. If the "Continuous Update" is selected this value has no effect.

#### **4.12 Sensitivity**

The SI-3™ is shipped with a default "Sensitivity" of 9, this should work for most applications. The sensitivity can be increased for longer range or decreased for closer range. If the sensitivity is too low the SI-3™ may take too long to lock onto and display a speed.

Typical ranges for an on-coming mid-sized sedan are:

| Setting | Range (feet) |
|---------|--------------|
| 1       | 350          |
| 2       | 575          |
| 3       | 800          |
| 4       | 950          |
| 5       | 1300         |
| 6       | 1700         |
| 7       | 1875         |
| 8       | 2400         |
| 9       | 2800         |
| 10      | >3000        |

The distances will vary based on location, body of the car and alignment of the antenna. It is normal for the range to vary by 10% on identical cars.

#### **4.13 Serial Protocol**

Refer to the product manual for more information on which protocol to use. <D> is a direction character that is "+" for vehicles coming towards the sign, "-" for vehicles moving away, and "?" when the direction cannot be determined. [S] represents the displayed speed. If a period is within the square brackets it is the decimal point. Any zeros are sent as described and do not change with a vehicle's speed. The <cr> signifies the end of the outgoing message. The default setting is <D>[SSS.]<cr>. Other protocols listed are used by Decatur for testing purposes. Zero Suppress

When this value is selected the SI-3™ will not send any information over the RS232 port unless a vehicle is detected.





- When a serial protocol is running and a command is sent to the SI-3™, the SI-3™ does receive and perform the requested function. However, the returned "OK" may be inserted anywhere in the data stream and the resulting action on the host computer can not be guaranteed. Example: The protocol is sending out "123.4" If a command is sent to the SI-3™, the response may be 12OK3.4". For this reason it is recommended that the "Stop" command be sent prior to any change in serial protocol if a serial protocol has been selected previously.

#### **4.14 Start and Stop Output Buttons**

These buttons are used to start and stop the continuously updated serial protocol. Any configured Serial Protocol will resume periodic data transmission after a power-cycle. The Stop command is used to temporarily stop the periodic data transmission. This Stop state is not retained after a power-cycle. The Clear Window button will clear the output window.

#### **4.15 Radar On/Off button**

The Radar On / Off buttons turn the radar transmitter on and off.

## 5. Performance Tips

Understanding potential radar interference and what to do when it occurs can greatly increase the radar's performance.

### 5.1 How Radar Works

Determining an object's speed begins with the radar transmitting a beam of microwave energy (radio waves) at an approaching or departing target. When energy from this beam strikes a target, a small amount of the beam is reflected back to the antenna. The reflected signal frequency shifts by an amount proportional to the speed of the target. This is known as the Doppler effect. The radar device then determines the target speed from the difference in frequency between the reflected and transmitted signal.

### 5.2 Interference Sources

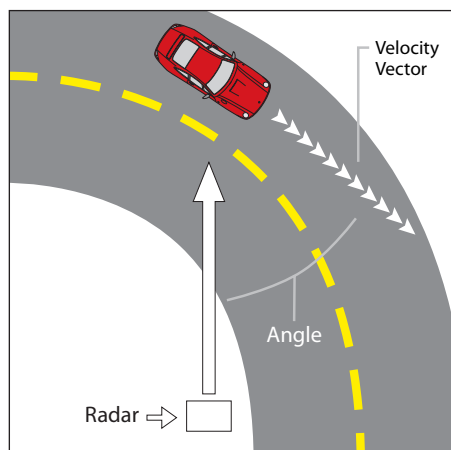
When properly installed and operated, Doppler radar technology is extremely accurate and reliable. However, variations in the environment can cause situations and circumstances which can cause spurious (erratic and unusually low or high) speeds to display. Signs that a speed is spurious can include the following characteristics:

- A reading appears when no target is in the operational range of the antenna.
- A target entering the operational range overrides the interference signal, causing the display speed to change suddenly to the target's speed.
- Speeds are irregular.

#### 5.2.1 Angular Interference (Cosine Effect)

The cosine effect causes the system to display a speed which is lower than the actual target speed. This condition occurs when the target's path is not parallel to the antenna such as the target vehicle traveling on a curve or hill.

As the angle between the beam of the antenna and the target increases, the displayed speed decreases. Ideally, an angle of zero (0) degrees is preferable, because the displayed speed is the actual target speed. However, in all uses of police radar, the radar device is always at a slight angle to the target vehicle to avoid collisions.



**Figure 5.2.1**

An angle between the antenna and the target causes the cosine effect

The following table shows the effect that an increasing angle has on a displayed speed.

| Actual Speed | Horizontal Angle Degrees |    |    |    |     |     |     |     |     |     |     |
|--------------|--------------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|
|              | 0°                       | 1° | 3° | 5° | 10° | 15° | 20° | 30° | 45° | 60° | 90° |
|              | Displayed speed:         |    |    |    |     |     |     |     |     |     |     |
| 30 mph       | 30                       | 29 | 29 | 29 | 29  | 28  | 28  | 26  | 21  | 15  | 0   |
| 40 mph       | 40                       | 39 | 39 | 39 | 39  | 38  | 37  | 34  | 28  | 20  | 0   |
| 50 mph       | 50                       | 49 | 49 | 49 | 49  | 48  | 46  | 43  | 35  | 25  | 0   |
| 60 mph       | 60                       | 59 | 59 | 59 | 59  | 57  | 56  | 51  | 31  | 30  | 0   |
| 70 mph       | 70                       | 69 | 69 | 69 | 68  | 67  | 65  | 60  | 49  | 35  | 0   |
| 80 mph       | 80                       | 79 | 79 | 79 | 78  | 77  | 75  | 69  | 57  | 40  | 0   |

**Table 5.2.1**

Actual and displayed speeds at antenna-to-target angles

Small angles (less than 10°) have little effect on accuracy. As the angle increases, the displayed speed decreases. At 90°, the target speed is 0—grossly incorrect.

### **5.2.2 Fan Interference**

Fan interference is one of the most common forms of interference that you are likely to experience. It is caused when the radar measures the speed of a blower fan that is within the beam path of the radar. If the SI-3™ is used inside of a building keep in mind that furnace and air conditioner fans can cause interference. To correct this, relocate the radar so it does not display spurious speeds or turn off the fan motor.

### **5.2.3 Electromagnetic Interference (EMI)**

Operating electric motors can produce EMI. EMI from power seats or windshield wipers can also produce spurious target speeds. To correct the interference, simply turn off its source.

### **5.2.4 Feedback Interference**

When the radar beam is directed at computer screens, streetlights, and other electronic devices, it can display spurious speeds. To correct the interference, relocate the SI-3™.

### **5.2.5 Multi-Path Beam Cancellation**

If multi-path beam cancellation occurs, the target vehicle speed sporadically blinks and reappears at semi-random intervals. This type of interference occurs when the radar loses track of a target because the target is reflecting two or more signals, which are interfering with each other. The SI-3™ is immune from multi-path cancellation.

### **5.2.6 Radio Frequency Interference (RFI)**

The system can inadvertently process radio energy as Doppler speeds, including that from 2-way radios, airport radar, microwave transmission towers, CB radio transmitters, and AM/FM transmission towers. For this type of interference to occur, the SI-3™ must be operating very close to the radio transmitter.

### **5.2.7 Scanning**

The SI-3™ is designed to be used while attached to a solid mount position. Moving or “scanning” the antenna past stationary objects can cause the system to detect motion. Obtaining a speed reading from scanning will not happen when you properly use the radar and is considered deliberate misuse of the system.

### **5.2.8 Environmental Factors: Rain & Snow**

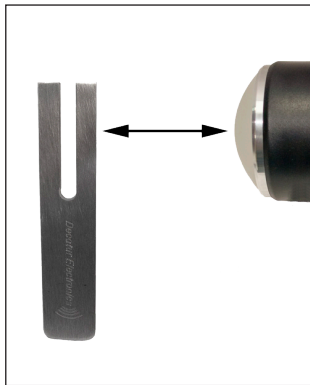
Environmental factors such as rain or snow can reduce the range (distance) at which a target can be detected. However, these factors will not affect accuracy.

## 6. Testing the Device

### 6.1 Tuning Fork Test

You can verify signal processing accuracy by using a tuning fork, which comes with the radar. There is a one minute time window from when the SI-3™ is first powered on in which you can test the unit using a tuning fork. After one minute the SI-3™ switches to directional mode and the fork will no longer be read.

To begin the test, tap the tines of the fork on a firm, non-metallic surface. The tuning fork will ring audibly. Then place the tuning fork that you tapped with the narrow side facing about 3 inches directly in front of the antenna. Compare the speed in the display window to the speed stamped on the fork. If the difference is within  $\pm 1$  display unit, the SI-3™ is working properly.



**Figure 6.1**

Place the vibrating tuning fork about 3 inches in front of the antenna

If the device does not display the expected speed, contact Decatur Electronics Customer Service at 800.428.4315 to arrange for service.

- Only tap the tuning fork against hard plastic, wood, and materials that are softer than metal. Repeatedly tapping the tines on hard surfaces, such as metal and concrete, can damage the tines and invalidate the fork for future tests.

## 7. Care, Cleaning, and Storage

- Avoid spilling food, beverages, and other liquids and substances on the radar device
- When you are not using or transporting the device, store it in its original packaging
- To clean the radar device, use a soft clean cloth, which is free of cleaning solutions

## 8. Specifications

### 8.1 Antenna Parameters

#### K-Band

|                                |                       |
|--------------------------------|-----------------------|
| Nominal transmission frequency | 24.150 GHz            |
| Nominal horizontal beamwidth   | 12°                   |
| Polarization                   | Linear<br>(Vertical)  |
| Nominal microwave power output | 7 mW                  |
| Maximum aperture power density | <1 mW/cm <sup>2</sup> |

### 8.2 Environment

|                                |   |
|--------------------------------|---|
| Ambient operating temperatures | -22°F to +158°F<br>(-30°C to +70°C)                                   |
| Maximum humidity               | 100% relative humidity<br>(Unit is weather proof,<br>not water proof) |

### 8.3 Speed Range Parameters

| Speed Display Ranges | Minimum | Maximum |
|----------------------|---------|---------|
| mph option           | 5       | 150     |
| km/h option          | 8       | 241     |

### 8.4 Power Consumption Parameters

|                      |                    |
|----------------------|--------------------|
| Supply voltage range | +10.8VDC to +24VDC |
|----------------------|--------------------|

## **9. Legal Requirements**

### **9.1 Documents**

*This page reserved  
for FCC Certification Letter*



## 9.2 FCC Statement

This device complies with FCC part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

## 9.3 Conditions

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## 9.4 Installer Note

This device must be installed in a manner that ensures 20 cm separation is maintained between this device's antenna and all persons in order to comply with the FCC and IC RF exposure requirements.

## 9.5 End User Note

Maintain a 20 cm separation between this device's antenna and all persons during operation in order to comply with the FCC and IC RF exposure requirements.

## 10. Frequently Asked Questions (FAQ)

### **Q. *My SI-3™ has poor range. How can I remedy this?***

- A. Verify that the antenna has no obstructions in front of it. If the gun still has poor range, increase the sensitivity level. If you still have this problem, contact Decatur Electronics.

### **Q. *What if I drop my SI-3™?***

- A. The unit is extremely durable. Simply power up and perform tuning fork test. If the unit doesn't appear to work properly, contact Decatur Electronics.

## 11. Warranty

### ONE-YEAR RADAR WARRANTY

The SI-3™ is guaranteed to be free from defects in workmanship and material and to operate within specifications for a period of one year. During this period we will repair or replace, at our option, any component found to be defective, without cost to the owner; providing you return the unit to Decatur Electronics, Inc. or to a Decatur authorized service center.

The full warranty on parts and workmanship does not include normal wear and tear, crushing, dropping, fire, impact, immersion, over-tightening of screws, damage from attempted repair or modifications by unauthorized service agents.

For repairs, simply return the unit directly to the factory or to a Decatur authorized service center. Refer to Section 12 Service Return Procedure.

### ONE-YEAR WARRANTY EXCEPTION

If you purchased the unit under a special buying program, such as a state purchase contract, etc., the above warranty may not apply. Please refer to the buying program contract for the appropriate warranty terms or contact Decatur Electronics.

## 12. Service Return Procedure

If you have questions, want a quick problem diagnosis, or need to return your unit to the factory:

- Call Decatur Electronics and ask to speak with a Customer Service Representative.  
Phone: 800.428.4315
- Ask for a Return Authorization Number.
- Based on the information that you provide, the Customer Service Representative will issue you a return authorization (RA) number. Write the RA number on your note and shipping label.
- If so directed, include a note describing the problem and/or the incident that resulted in the problem. Failure to do so can delay the return of your system.
- Return the system to:  
Decatur Electronics, Inc.  
3433 East Wood Street  
Phoenix, AZ, 85040, USA  
RA # XXXXXX

Decatur Electronics does not accept items shipped COD. The customer is responsible for all shipping charges to the Decatur service location.

On warranty items Decatur Electronics will pay the freight (up to \$10 US) for shipping the system from the repair facility to the customer. We will charge the customer for any shipping charges above the initial \$10. If you want to ship your package express or next day air, we will send you an invoice for these freight charges.

After your product has been received, our technicians will investigate the problem. Once they have diagnosed the problem, and if your SI-3™ is out of warranty, you will be sent an estimate of cost, prior to any repair work being performed. After receiving the estimate, you can choose from the following options:

1. Approve the estimate and proceed with repair.
2. Decline the estimate, and pay an estimate fee and return shipping.
3. Decline the estimate and allow Decatur to recycle the unit, all fees are waived.

If we do not hear back from within 30 days, then we will proceed with option 3.

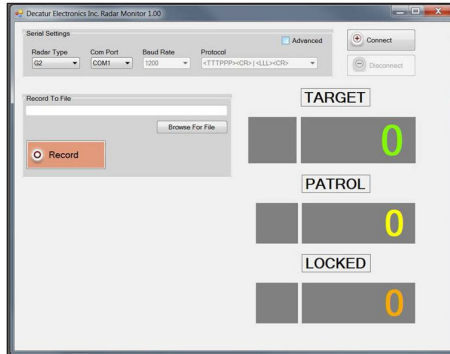
If your product is under warranty it will automatically be repaired and sent back to you.

### 13. How to Order Additional Products

You can order upgrades and additional products for the SI-3™ (when available). To see product descriptions or order products, see the Decatur Electronics Web site at [www.DecaturElectronics.com](http://www.DecaturElectronics.com) or call the sales office at 800.428.4315.

#### *Radar Monitor*

The optional Radar Monitor program is designed to display speed information on a computer and record that information to a text file for analysis. The program has been design to work specifically with the SI-3™. For more information on the Radar Monitor contact the sales offices at Decatur Electronics.



**Figure 13**  
Radar Monitor Screen

## Appendix A

### **SI-3 Serial Commands**

Commands transmitted to the SI-3 unit will be variable length messages in ASCII followed by a carriage return <CR> or <decimal 13>. Messages received by the unit will be followed by an acknowledgment ASCII "OK". To save new settings into permanent flash memory, an ASCII "F" followed by a <CR> must be sent to the unit (otherwise, new settings will get lost on power-down

#### **Get unit ID**

Send ASCII i,<CR>

Radar responds back with ASCII unit ID (0 – 255), <LF>, <CR>

#### **Get serial number**

Send ASCII s,<CR>

Radar responds back with ASCII unit serial number (0 – 65535), <LF>, <CR>

#### **Set speed units/conversion**

Send ASCII C,units,<CR>

Where units =

0 -> mph,

1 -> kph,

2 -> fps,

3 -> m/s

Radar responds back with ASCII "OK",<LF>,<CR>

#### **Set Max speed**

Send ASCII M,XXX,<CR>

Where XXX = max speed in ASCII format

Radar responds back with ASCII "OK",<LF>,<CR>

#### **Set min speed**

Send ASCII m,XXX,<CR>

Where XXX = min speed in ASCII format

Radar responds back with ASCII "OK",<LF>,<CR>

**Set target report**

Send ASCII T,X,<CR>

Where ASCII value

X = 0 -> All targets,

X = 1 -> All directional,

X = 2 -> Towards,

X = 3 -> Away

Radar responds back with ASCII "OK",<LF>,<CR>

**Set horizontal Cosine Angle**

Send ASCII H,XX,<CR>

Where XX = angle degrees in ASCII format

Radar responds back with ASCII "OK",<LF>,<CR>

**Set vertical Cosine Angle**

Send ASCII V,XX,<CR>

Where XX = angle degrees in ASCII format

Radar responds back with ASCII "OK",<LF>,<CR>

**Set hold time**

Send ASCII h,XXXX,<CR>

Where XXXX = milliseconds in ASCII format

Radar responds back with ASCII "OK",<LF>,<CR>

**Set update rate**

(note: radar requires a power cycle for new values to be used)

Send ASCII U,X,<CR>

Where X = 0 -> 1\*sec, X = 1 -> 2\*sec, X = 2->5\*sec, X=3->8\*sec,X=4-

>change only, X=5->poll

Radar responds back with ASCII "OK",<LF>,<CR>

**Set sensitivity**

Send ASCII S,X,<CR>

Where X = Sensitivity in ASCII format (0 to 9 allowed) 9 is maximum value.

Radar responds back with ASCII "OK",<LF>,<CR>

**Set speed alarm**

Send ASCII A,XXX,<CR>

Where XXX = speed alarm in ASCII format

Radar responds back with ASCII "OK",<LF>,<CR>

**Set protocol**

Send ASCII P,XX,<CR>

Where XX = serial port protocol 00 to 99

XX = 00 -> none

XX = 01 -> standard output for that model

XX = 02 -> FFT output

XX = 03 -> debug

Radar responds back with ASCII "OK",<LF>,<CR>

**Set baud rate**

Send ASCII B,X,<CR>

Where X = baud rate selector number in ASCII format

X = 0 -> Baud rate set to 1200

X = 1 -> Baud rate set to 2400

X = 2 -> Baud rate set to 4800

X = 3 -> Baud rate set to 9600

X = 4 -> Baud rate set to 19200

X = 5 -> Baud rate set to 34800

X = 6 -> Baud rate set to 57600

X = 7 -> Baud rate set to 115200

Radar responds back with ASCII "OK",<LF>,<CR>

Note: Settings will not be used until next power-on cycle.

**Poll speed**

(only available if Radar is configured for polled mode)

Send ASCII \*P<CR> or \*<CR>

Radar responds with speed update

**Reset to factory defaults**

Send ASCII X,<CR> or ASCII x,<CR>

Radar will reset all configure items back to factory defaults and save to flash.

Radar responds back with ASCII "FACTORY DEFAULTS",<LF>,<CR> if successful.

**Save configure items to FLASH**

Send ASCII F,<CR>

Radar responds back with ASCII "OK FLASH SAVED",<LF>,<CR> on success or ASCII "FLASH FAILURE",<LF>,<CR> on failure.

**Get configure data <not implemented – future release>**

Send ASCII c,<CR>

Radar responds back with list of configurable items and values.



## User Notes







[www.DecaturElectronics.com](http://www.DecaturElectronics.com)

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