SmarTek Acoustic Sensor - Version 1 (SAS-1)

Installation and Setup Guide

Part-D
Unpacking, SAS Monitor Installation, and Quick Checkout

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Note: In all cases, do not work or position equipment over an active traffic lane. Working over active lanes presents a hazard to the installer and to travelers using the highway. Follow local authorized procedures when installing the SAS-1 unit and any associated components or subsystems.

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Unpack Contents of Shipment

Each SAS-1 System comes fully assembled and configured according to selected options at the time the order was placed. All electronic hardware necessary for installation is included. SAS-1 ships with a short home run cable (20 to 50 ft) as specified at the time the order was placed. Inspect the shipping container for any signs of damage. If the contents are incomplete or if there appears to be damage, notify SmarTek Systems.

Install SAS Monitor and Setup

The **SAS Monitor and Setup** software provided by SmarTek Systems is used to setup each SAS-1 unit and to monitor operation to verify SAS-1 settings and performance. The SAS Monitor and Setup software is designed to run on a Windows PC. For portability, a laptop PC works well. The SAS Monitor and Setup software is provided on a CD and is installed by clicking **Start/Run.** In the Run dialog window, click the **Browse** button. Click the down arrow in the "**Look In**" text box at the top of the Browse dialog window. Click the CD identified as "**SmarTekApps**". Double click the **Setup_Files** folder and then double click the **OneFile** folder. Click the **Setupex.exe** file and the click the **Open** button. Click **OK** in the Run dialog window and follow the on-screen instructions. Use all default settings and folders if possible.
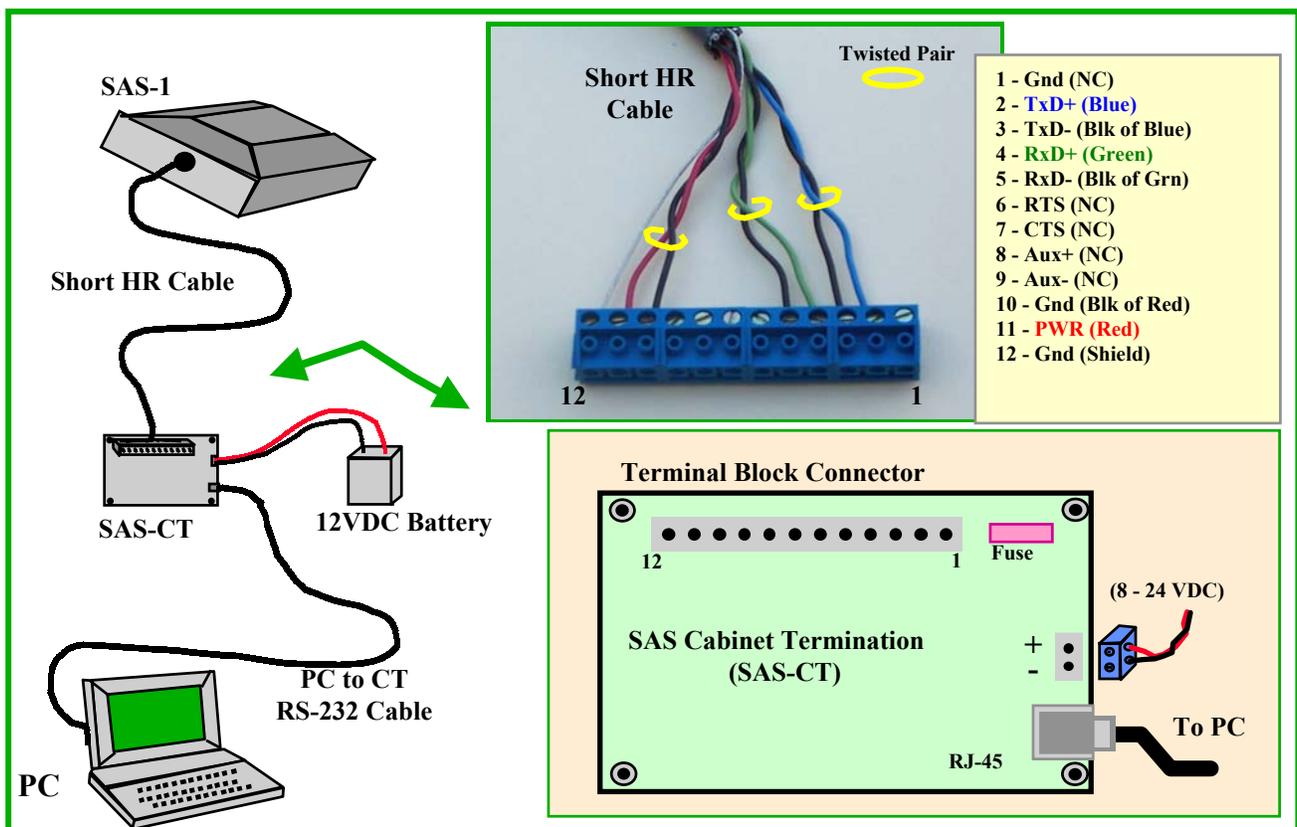

Figure 1 SAS-1 Bench Top Quick Checkout

Quick Checkout of SAS-1 on Bench Top

Before taking any equipment to the traffic monitoring site for permanent installation, it is highly recommended that the SAS-1 be connected and checked out in the shop. The following items are required for connecting and checking out the SAS-1 in the shop and will be needed at the monitoring site for SAS-1 setup.

      1) Laptop Computer Running Windows (200 MHz Pentium or better)
      2) Installation Tools and Bandit Stainless Steel Strapping
      3) AC to DC Power Converter or 12 Volt Battery for quick checkout.

Place the SAS-1 Unit on a workbench and temporarily connect the SAS-1 short home run cable to the SAS-CT and the SAS-CT to the Laptop PC (using the PC to CT serial cable) as shown in Figure 1. **Remove the blade fuse** if it is present on the SAS-CT. Connect DC power (8 to 24 VDC) to the SAS-CT using the two position pluggable terminal block connector. Power may come from an AC/DC converter (i.e. 9 VDC at 500 milli-amps), or a battery (i.e. 12 VDC). **Double check all connections between the SAS-1, SAS-CT, Power Supply (or Battery), and the PC Comm Port. Be sure the polarity for the power connector is correct and then insert the blade fuse in place on the SAS-CT.**

Run the **SAS Monitor and Setup** program on the PC by clicking **Start/Programs/SmarTek Systems/SAS_Monitor_V5**. On the SAS Monitor splash screen click the **Direct** button. The main SAS Monitor and Setup display will now be on the screen (Figure 2).

Click the menu item **Settings/Comm Port/Set Up Comm Port** to set the PC Comm Port parameters. The **Comm Port** Number for a laptop PC is typically **1 or 2**. Set the Comm Port Number to the appropriate value corresponding to the external DB-9 connector on the back of the laptop. The first time SAS Monitor and Setup is run, the Comm Port Dialog Window will automatically popup. The rest of the Comm Port parameters should be as follows:

Baud Rate	38400 bps (match the SAS-1 baud rate-See Tag on the SAS-1)
Data Bits	8
Parity	N
Stop Bits	1
HW Flow Control	Unchecked
SW Flow Control	Unchecked
Set DTR line high	Checked
Set RTS line high	Checked.

Click the menu item **Sensor/Get SAS ID**. This retrieves the SAS ID from the SAS-1. The SAS ID is a 7 character ID (SAS0001, SAS0002, etc.). Set the SAS Monitor **Mode** to **1** (Traffic Acoustic Image Display Mode) by left clicking in the upper (increment) or lower (decrement) part of the field.

Click the **Start Button** in SAS Monitor and Setup Display (Figure 2). In the Traffic Acoustic Image (TAI) display area (right side of the SAS Monitor Display), **Blue Lines** should begin to
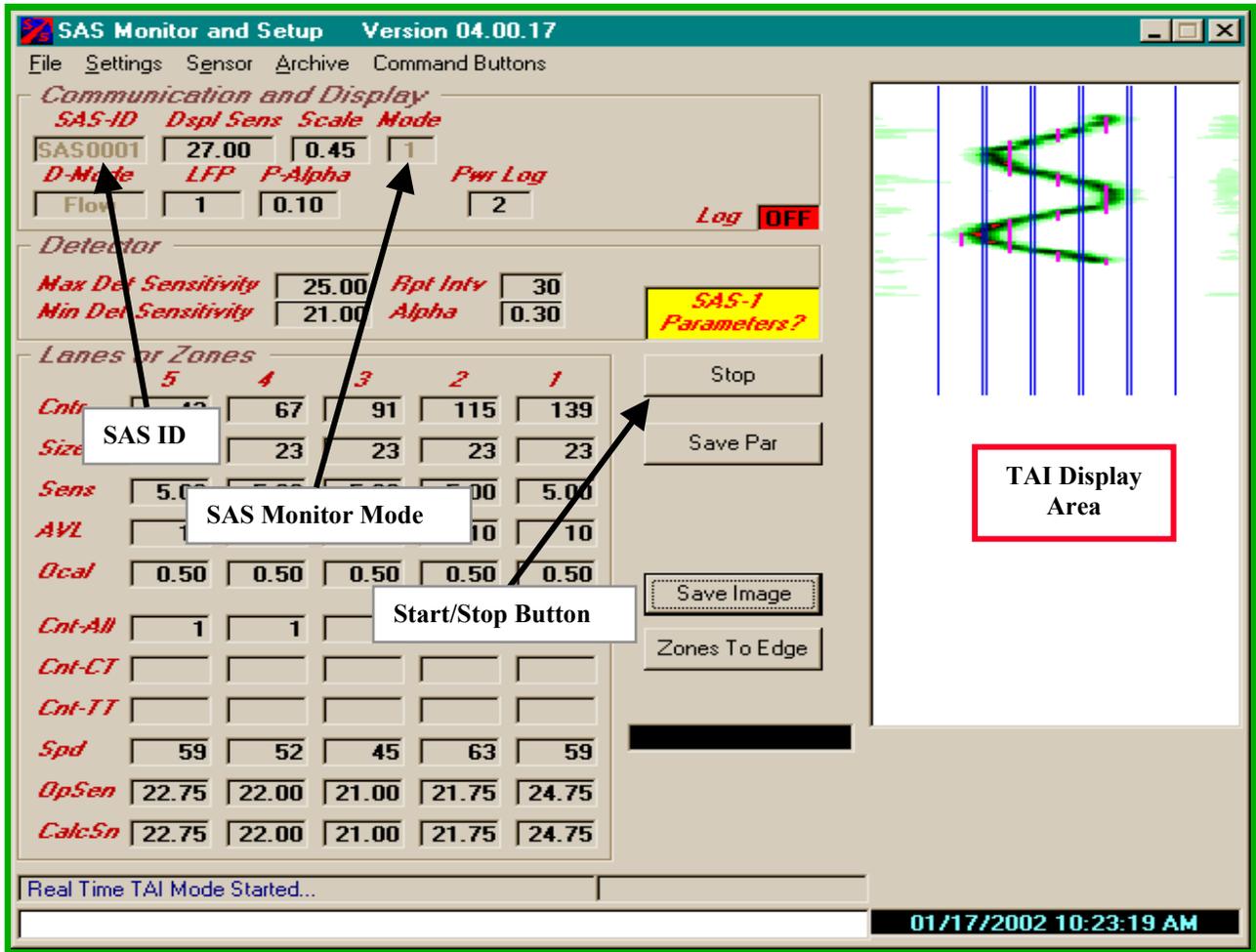
Figure 2 SAS Monitor and Setup Main Display – Quick Checkout

draw from the display top to the bottom. These lines indicate the positions of detection zones set in the SAS-1. The presence of the Blue Lines indicate that SAS-1 is running and communicating properly with the PC (SAS Monitor and Setup program). If no Blue Lines are present, click on the **Stop Button** in SAS Monitor and then double check all connections, the Mode setting, and the Comm Port settings. With the power plug connected on the SAS-CT, check the voltage at the plug. The voltage should be at least 8 VDC. Repeat the above procedure for starting communications between the SAS-1 and SAS Monitor and Setup.

Once the SAS-1 and the SAS Monitor and Setup program are communicating (Blue Lines are present and drawing from top to bottom), you may perform a simple noise test to check the SAS-1 response. Set the **Display Sensitivity** to **25.00** by left clicking in the **Dspl Sens** field (clicking in the upper part of field increments while clicking in the lower part decrements). Stand in front of the SAS-1 about 10 to 15 ft away and make noise by hissing, crunching paper or plastic, or jingling keys. Note the green response on the TAI display. Repeat the process while at slightly different positions (relative to the short dimension of SAS-1) and note the position change of the response on the TAI display. If you observe the Blue Lines drawing on the TAI and the green

response when noise is generated, the SAS-1 operating status is OK. Click the **Stop Button** on the SAS Monitor and Setup program display.

The SAS ID is of the form **SASxxxx**, where **xxxx** is a four digit number (i.e. SAS0001, SAS0002,.etc.). For installations where only one SAS-1 will be connected to a cabinet controller via a home run cable or wireless link, you should set the SAS ID to SAS0001.

For installations where multiple SAS-1s will be connected to a single cabinet controller via a single home run cable or via wireless links, you must set each SAS ID to consecutive values starting at SAS0001. For example, a traffic monitoring station with three SAS-1s connected to the roadside cabinet controller using a single home run cable, should have the SAS IDs set to SAS0001, SAS0002, and SAS0003. This allows the cabinet controller to distinguish the data from each of the SAS-1 units.

To set the SAS-1 ID, click on the menu item, **Sensor/Change SAS ID**. An Information Dialog Window will popup asking for the new SAS ID. The new SAS ID may be incremented or decremented by **left clicking** in the **upper** or **lower** portion or the SAS ID Field. After providing the new SAS-1 ID, click **OK**. The Status Message at the bottom left of the SAS Monitor and Setup Display should indicate a positive response (**OK**) from the SAS-1 and the SAS-ID Field will be updated to the new ID value. If the "**OK**" response is received, then click the **Start Button** to verify SAS-1 operation with the new SAS ID value. If the Blue Lines begin to draw as previously described, then the SAS-1 recognizes its new ID. Click the **Stop Button**. If the positive "OK" response is not immediately received, click the **Stop Button** and click on the menu item **Sensor/Get SAS ID**. If the returned ID is not what you set, repeat the above procedure for setting the SAS-ID.

Disconnect the power connector, the pluggable terminal block connector (short home run cable), and the serial PC cable from the SAS-CT.

The SAS-1 and its interfaces have been checked out and are now ready to be installed at the traffic monitoring site.