SLAM Installation Guide

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Abstract

This document covers the installation of SLAM hardware and software. The hardware portion covers permanent monitoring locations and the Remote Alarm Indicator.

Revision History

Revision	Date	Initials	Description
1.0	1 Mar 02	PTW	Creation
1.1	20 Mar 02	FWW	Complete review of Installation Guide

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1. Packing List

Each component of the SLAM system is detailed below. Your installation may not include some component(s) or may include multiples of a component(s). Check your invoice for the components included in your particular installation.

1.1 Computer System Component

- Computer
    - Tower Case with power supply
    - Intel Pentium compatible motherboard
    - RAM
    - Video card
    - Network card
    - 2 serial communication ports
    - PS2 mouse port
    - Keyboard port
    - CD-ROM drive
    - 3.5" floppy drive
- Keyboard
- Mouse
- Power cord
- Software
    - Microsoft Windows operating system
    - Signalysis Sound Level Automated Monitoring (SLAM) software
    - Adobe Acrobat Reader free version
    - WinZip demo version

1.2 Permanent Outdoor Monitoring Component

- Bruel & Kjaer 2236 sound level meter
- Bruel & Kjaer AO0408 3 meter SLM microphone extension cable
- Bruel & Kjaer 1404 Outdoor microphone kit
- RS-232 null modem serial cable, 2 meter, 9-pin female D-sub to 9-pin female D-sub
- 9VDC wall adapter

1.3 Remote Alarm Indicator Component

- Remote Alarm Indicator (RAI)
- RAI – junction box cable
    - Choice of 10-meter 5-pin male Lemo to 5-pin male Lemo
    - Or 10-meter 9-pin female D-sub to 9-pin female D-sub
    - Or 10-meter 5-pin XLR Lemo to 5-pin male XLR
- 9VDC wall adapter
- Junction box
- Junction box connectors
    - Panel mount 9-pin female D-sub
    - Choice of panel mount 5-pin female Lemo
    - Or panel mount 9-pin male D-sub
- Computer – junction box connectors
    - 9-pin female D-sub
    - 9-pin male D-sub

2. Computer Configuration

The following describes requirements for the configuration of the computer in addition to the standard:
- Hard drive partitioned 50-50.
- SLAM installed on first partition.
- Databases and user data on second partition.
- Shortcuts on the desktop.
  - SLAM
  - Signalysis Web Site
  - Signalysis WebEx
  - Signalysis FTP
- All serial ports 9-pin male connectors.
- All serial communications ports must be enabled and working.

3. Permanent Outdoor Monitoring Installation

The diagrams in the Appendix A describe the specific cables and connectors used for installation. Please refer to them throughout this installation. Below is the general description of how to perform the installation.

3.1 Sound Level Meter

The sound level meter's body must be housed in a weatherproof case or indoors. Typically the meter is placed near the computer system. The SLM is capable of running on four AA batteries but it is usually more convenient for permanent installations to use an external power supply. The microphone/pre-amp is detached for use in the outdoor section. For specific information about the sound level meter, please review the documentation and instructions that were supplied with the sound level meter.
- Remove microphone/pre-amp from meter base.
- If using the external power, connect to the meter's DC input.
- Connect the serial cable between the meter and one of the computer's serial ports.
- Position meter in location.

3.2 Microphone Cabling

The meter ships with a 3-meter extension cable that is generally not long enough to be used as-is. In some cases, a 10-meter cable will be adequate and can be purchased instead of the 3-meter cable. But in most installations the cable will need to be longer than 10 meters. For these situations the 3-meter cable can be cut and spliced to the ends of a much longer cable or the connectors on the 3-meter cable can be unsoldered and used to create the longer cable.
- Run the longer cable from the location of the meter to the location of the microphone.
- Cut the 3-meter cable or unsolder the connectors.
- Splice the 3-meter cable halves onto the longer cable or solder the 3-meter cable's connectors onto the longer cable. See Appendix A for wiring diagrams.
- Note that the connectors are different on each end.
- Connect the indoor side of the microphone cable to the top of the sound level meter.

3.3 Microphone

The microphone and pre-amp from the sound level meter need to be put together with the weather proofing kit. Please review the documentation and instructions that were supplied with the weather proofing kit to accomplish this.
- Configure the microphone and weatherproofing kit.
- Mount the microphone.
- Connect the outdoor side of the microphone cable to the microphone.

4. Permanent Outdoor Monitoring Testing

4.1 Serial Connection

The serial connection with the sound level meter can be tested using Windows' HyperTerminal program. Simply open the communications port containing the SLM and power on the meter. At power on, the meter identifies itself across the serial line. Send some serial commands to verify that the communication works both directions.

- Determine the B&K2236 SLM's communications settings.
    - Power on the meter.
    - Press Show.
    - Use the Up and Down Parameter arrows to scroll the list to "Interface".
    - Note the baud rate (ex. 9600 Baud) and the handshaking method (ex. –XON/XOFF).
- In Windows, run the HyperTerminal application and configure for COM port.
    - Usually the menus Start | Programs | Accessories | Communications | HyperTerminal.
    - Type in a name for the connection similar to "COMx Direct".
    - Select the COM port to which the SLM is attached from the list of items under "Connect Using".
    - Set COM properties as follows: "Bits per second" = SLM's baud rate, "Flow control" = SLM's handshaking, "Data bits" = 8, "Parity" = None and "Stop bits" = 1.
- Cycle the power on the SLM.
    - When the SLM powers up it sends the message "2236 Monitor" to HyperTerminal.
    - When the SLM powers down it sends the message "Measurements Paused. SLM off." to HyperTerminal.
- If you do not see the appropriate messages you will need to check the SLM communications cable.
- With the SLM on, type "AUTOL OFF" in HyperTerminal and press Return.
    - The meter will respond with "Auto Logging Off".
    - If you do not see the appropriate messages you will need to check the SLM communications cable.

4.2 Microphone Connection

- Have someone whistle or clap near the microphone.
- The display on the SLM should indicate the changing sound levels.
- Calibrate the microphone.
    - Attach the microphone calibrator to the microphone.
    - Turn the calibrator on.
    - Power on the meter.
    - Press Show.
    - Use the Up and Down Parameter arrows to scroll the list to "Calibration".
    - Press Edit.
    - Enter the calibration source level.
    - Press OK.
    - The new factor should be close to 0.0dB.
    - If the factor is not close or any errors occur it indicates a possible problem with the microphone cable.
    - Press OK or NO to accept or reject the new calibration factor.

5. RAI Installation

The Remote Alarm Indicator (RAI) is a display unit which conveys the values from a single sound level meter and indicates if that value is near preset alarm limits. The durable RAI box is located in some remote location for viewing by the person controlling the sound levels. The RAI requires communications from the computer system and a power source. The power and communications are combined in a juction box to provide RAI with a single cable interface. The diagrams in the Appendix A describe the specific cables and connectors used for installation. Please refer to them throughout this installation. Below is the general description of how to perform the installation.

5.1 Serial Connection

A cable from the computer to the remote location of the RAI provides the serial communications. It is important to follow proper shielding procedures and run the cable with data (not power) cables.
- Run the cable from the location of the computer to the location of the junction box.
- Solder the serial connector onto the computer end.
- Plug one end of the cable into an open COM port on the computer.
- Solder the serial connector onto the junction box end.

5.2 Junction Box

The junction box protects the DC power supply from the weather and also provides a location to combine power and communications wires into a single cable for the RAI.
- Mount junction box at location.
- Wire 120V power outlet to junction box.
- Mount the panel mount serial connector.
- Mount the panel mount RAI connector (D-sub, Lemo, or XLR).
- Solder wires between two connectors.
- Solder leads from DC power supply to RAI connector.

5.3 RAI Connection

There are three possible styles of connectors for the RAI (D-sub, Lemo, or XLR). One of these has been chosen and shipped with your unit. A 10-meter cable with this connector choice is also shipped with the RAI. Note that only one of the connections on the rear of the RAI will be used.
- Connect the 10-meter cable to the rear of the RAI unit.
- Connect the other end of the 10-meter cable to the connector in the junction box.
- Plug the junction box power supply into the power outlet.
- Turn the RAI on with the toggle switch on the rear of the unit.

6. RAI Testing

6.1 Power Connection

- Locate power switch on the rear of the RAI.
- Turn to the ON position indicated by the "1".
- Some part of the displays should light. This is a random power on state so it can power-up without any displays lit.
- If the display did not light, toggle the power switch off and on again to verify it was not just random chance to power up with all displays dimmed.
- If displays still do not light, check your power connections.

6.2 Communications Connection

- In Windows, run the HyperTerminal application and configure for COM port.
  - Usually the menus Start | Programs | Accessories | Communications | HyperTerminal.
  - Type in a name for the connection similar to "COMx Direct".
  - Select the COM port to which the RAI is attached from the list of items under "Connect Using".
  - Set COM properties as follows: "Bits per second" = 1200, "Flow control" = None, "Data bits" = 8, "Parity" = None and "Stop bits" = 1.
- Cycle the power on the RAI unit once.
- HyperTerminal should show "KIWI-RAI Ver x.xx" where "x.xx" is the version number of the firmware.
- If HyperTerminal does not show this then you will need to troubleshoot the RAI communications cable.

7. Troubleshooting

Below are general guidelines for things to examine when there are problems with the SLAM hardware system. Also review the "Testing" sections of this document for instructions on simple tests that can be performed. These tests alleviate the need to work with the SLAM software when troubleshooting.

7.1 SLM Communications

- Verify the communications cable is plugged into the proper COM port on the computer.
- Verify the communications cable is firmly plugged into the sound level meter.
- Verify the SLM has power.
- Verify that the SLM's baud rate and handshaking match that of the computer's.
- Verify the continuity of the communications cable using a continuity checker.
- Verify the computer COM port is functioning with a loop-back connector and HyperTerminal.

7.2 RAI Communications

- Verify the communications cable is plugged into the proper COM port on the computer.
- Verify the communications cable is snuggly plugged into the Junction box.
- Verify that the RAI cable is firmly plugged into both the junction box and RAI.
- Verify the RAI has power.
- Verify the continuity of the communications cable using a continuity checker.
- Verify the continuity of the RAI cable using a continuity checker.
- Verify the continuity of the junction box wiring using a continuity checker.
- Verify the computer COM port is functioning with a loop-back connector and HyperTerminal.

7.3 Sound Level Readings

- Verify that the microphone head is not visibly damaged.
- Verify the microphone cable is plugged into the microphone.
- Verify the microphone cable is firmly plugged into the sound level meter.
- Verify the SLM has power.
- Verify that the SLM and microphone are properly calibrated.
- Verify the continuity of the microphone cable using a continuity checker.
- Verify SLM operation by connecting microphone/pre-amp directly to SLM.

8. Version and Specification Information

8.1 Signalysis Software

SLAM – 2.01.00
Database – 0.00.00

8.2 Remote Alarm Indicator

EPROM – ver 2.1
Supported connectors – D-Sub, Lemo and XLR

8.3 B&K 2236 Sound Level Meter

Running software C-007 ver 1.2
Four AA batteries or optional external power 7-12VDC center pin positive.

9. Appendix A – Diagrams