

SPORTSOUND AMPLIFIER FIELD GUIDE

DD3318172
Rev 05
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DAKTRONICS

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1 Introduction

The purpose of this guide is to describe Daktronics Standard Sound System and Computer Setup Procedures, including necessary information for proper computer setup and connection to Daktronics Standard Outdoor Audio Systems. Up-to-date firmware and IP addresses are required for proper operation of diagnostic Monitor Applications.

Daktronics issued computer systems should already be configured to work properly with our sound systems. The computer systems should have all of the software and components required to operate. However, it may be necessary to load certain programs and files and make modifications to both the computer and sound system to work correctly.

It may be necessary to load firmware onto your amplifiers. Whether the improper firmware is preloaded or just a firmware update is necessary, knowing how to load firmware is an essential skill when working with any Daktronics audio system. Monitor Applications will not function properly with out-of-date firmware or improper IP settings.

Note: Daktronics Standard Sound systems produced after April 2014 should already have updated firmware and the IP addresses set to function properly with the Monitor Applications. If you are updating an earlier year sound system, update Amplifier Firmware first, and then set Static IP addresses to prevent amplifiers from becoming unreachable.

The software and settings outlined in this field guide have been tested to work well on laptops and PCs running Microsoft Windows 7 through Windows 10. This software is not proven to work on other platforms such as Apple products or tablets. Issues with connectivity have been experienced with the use of varying types of USB to Ethernet dongle adapters.

2 Software Installation

Each piece of software is free to download and use. Daktronics Monitor Applications are available exclusively through Daktronics, and each monitor application will work properly only on its respective sound system.

It is important to download and have all software configured and firmware files in order prior to connecting to a sound system. All outside connections must be disabled to properly connect to Daktronics Sound systems. Results are most reliable when disconnected from all outside networks, VPN services are disabled, and PC is placed into Airplane Mode.

Microsoft .NET Framework 4

1. Verify that Microsoft.NET Framework 4 is installed on your computer by going to **Start > Control Panel > Programs and Features (Figure 1)**.

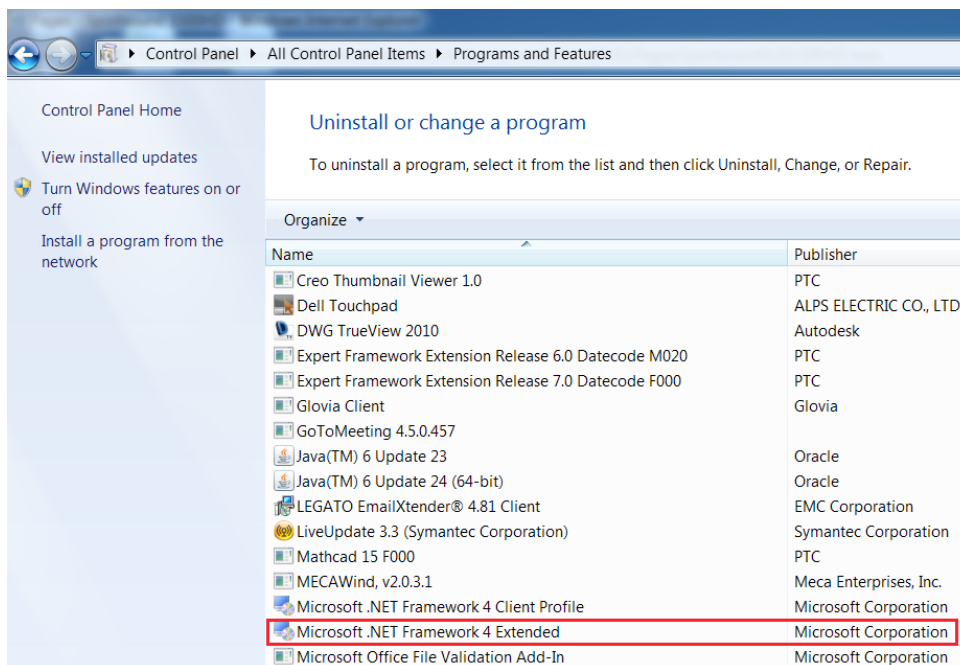


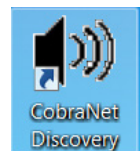
Figure 1: Control Panel - .NET Framework 4

2. If this program is not installed on your computer, you must download and install it from the internet or use the link below before proceeding.

<http://www.microsoft.com/downloads/en/details.aspx?FamilyID=9cfb2d51-5ff4-4491-b0e5-b386f32c0992&displaylang=en>

CobraNet Discovery

1. Download and Install CobraNet Discovery version 4.0.5:
<http://www.cobranet.info/downloads/disco/405>
2. Once CobraNet Discovery is installed, double-click the Desktop icon to open the program.
3. Set CobraNet Discovery to allow IP address assignment for CobraNet devices on the network.
 - a. In CobraNet Discovery, go to **Tools > Options (Figure 2)**.
 - b. Select the *Network Adapter* you will use to connect to the amplifier(s).



- c. Set the *Start* and *End IP Address Range* as follows:

Start IP Address: 192.168.1.1
 End IP Address: 192.168.1.159

- d. Check the box for **Enable Auto Assignment**, and then click **OK**.

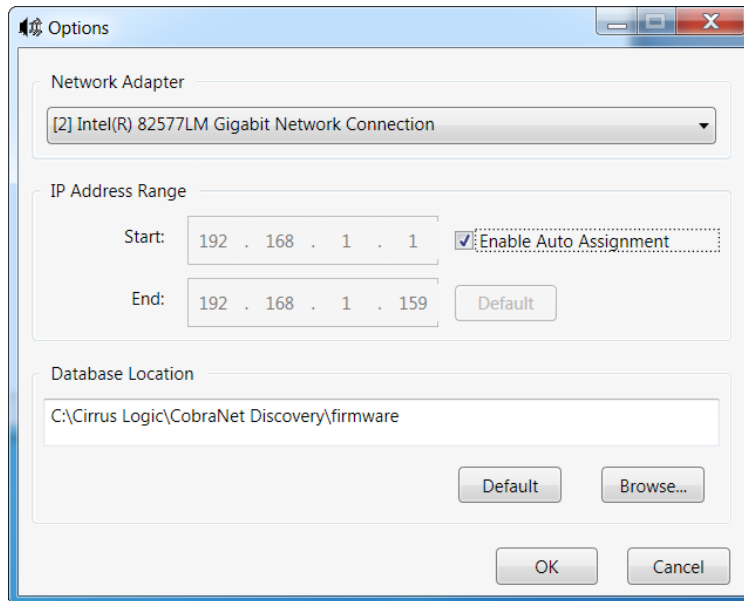


Figure 2: CobraNet Discovery Options

4. Set CobraNet Discovery explorer view to display these data field columns of interest (**Figure 3**): IP Address, MAC Address, errorCode, errorCount, sysDescription, sysName, sysContact, sysLocation, Rx1, Tx1

Note: To add or delete columns, right-click on one of the column headings. Click on the data fields to display in the list that appears.

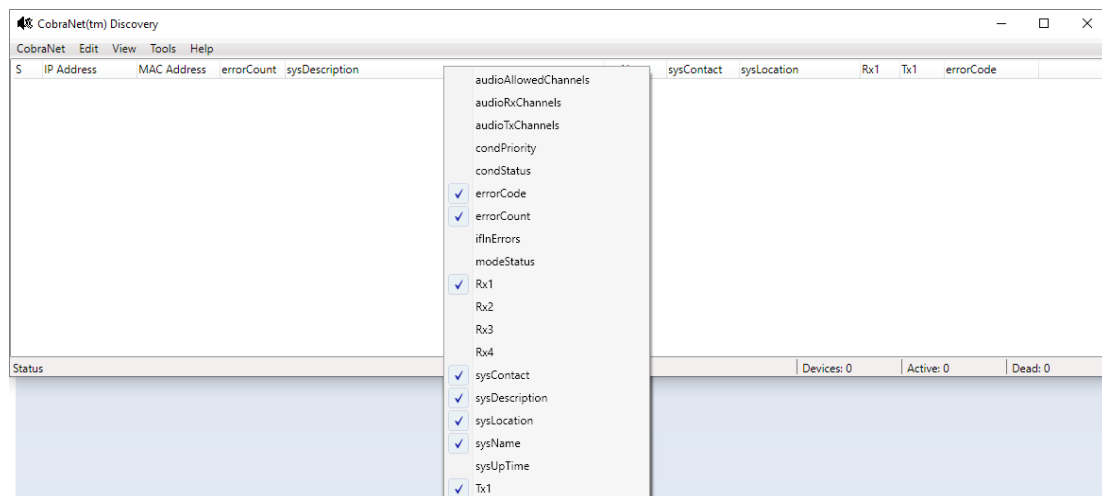


Figure 3: CobraNet Discovery Data Fields

5. The software must be modified slightly to allow us to write firmware to the amplifiers. To adjust this, go to "C:\Cirrus Logic\CobraNet Discovery", right-click on "CNDisco.exe.config", and open the file with Notepad (**Figure 4**).
6. Find the <add key="Advanced feature" value="0" /> attribute. Change the value from "0" to "1", and then **Save** and close the file.

Software Installation

```

CNDisco.exe.Config - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <configSections>
    <section name="CobraNet" type="CobraNet.Cobramon.CobraNetSection, CNDisco" />
  </configSections>
  <appSettings>
  </appSettings>
  <CobraNet>
    <CommonSetting>
      <add key="SCR Refresh Period" value="3000" />
      <add key="Adapter Index" value="[0] Intel(R) Ethernet Connection (4) I219-LM" />
      <add key="Firmware Location" value="C:\Cirrus Logic\CobraNet Discovery\firmware" />
      <add key="Age To Die" value="5000" />
      <add key="Advanced Feature" value="1" />
      <add key="cobramon debug" value="0" />
      <add key="cobramon log" value="0" />
      <add key="CC_UIMask" value="EnableConfig, EnableReport, EnableAdvanced, EnableSnmp" />
      <add key="CC_Enable" value="EnableConfig, EnableReport, EnableAdvanced" />
      <add key="CC_ReadCommunity" value="public" />
      <add key="CC_WriteCommunity" value="private" />
      <add key="CC_Retries" value="2" />
      <add key="CC_Timeout" value="1500" />
      <add key="CC_Delay" value="10" />
    </CommonSetting>
    <WidthOfDefaultColumns>
  </CobraNet>
</configuration>

```

Figure 4: CNDisco.exe Config - Notepad

Monitor Application

1. Go to <http://dakfiles.daktronics.com> and navigate to **Audio > Software Installation > Monitor Panels**:

[\[To Parent Directory\]](#)

5/13/2016 10:19 AM	2197422	DD3318172 - Sportsound Amplifier Field Guide.pdf
1/22/2014 12:54 PM	396	READ ME.txt
2/17/2016 3:29 PM	23762212	SS1500HD MONITOR NEW.zip
10/7/2014 10:30 AM	22106417	SS2000HD MONITOR.zip
10/7/2014 10:28 AM	23237054	SS500HD MONITOR.zip

2. Download the specific zip file(s) you need.
3. Right-click on a downloaded zip file and select **Extract All**. Click **Extract** to create a folder in the same location as the zip file. Repeat this step for all downloaded zip files.
4. Inside the unzipped folder, double-click the Application (.exe) file to open the program:

Name	Date modified	Type	Size
config.json	10/7/2014 9:29 AM	JSON File	1 KB
ffmpegsumo.dll	1/20/2016 12:27 PM	Application extens...	841 KB
icudt.dll	1/20/2016 12:27 PM	Application extens...	9,724 KB
libEGL.dll	1/20/2016 12:27 PM	Application extens...	100 KB
libGLESw2.dll	1/20/2016 12:27 PM	Application extens...	860 KB
nw.pak	1/20/2016 12:27 PM	PAK File	5,160 KB
SS1500HD	1/20/2016 12:27 PM	Application	38,491 KB

For more information about the monitor application, refer to **Section 6: Monitor Application Overview (p.17)**.

CobraMote (Legacy)

Note: Only install CobraMote if directed by audio engineering for advanced operation. Use of CobraMote software is for legacy systems only.

1. Go to <http://dakfiles.daktronics.com> and navigate to **Audio > Software Installation:**

[To Parent Directory]

```
4/5/2013 5:08 PM 3089408 CNDisco v405 x32.msi
4/5/2013 5:08 PM 2659328 CNDisco v405 x64.msi
9/8/2015 2:19 PM 31043981 Cobramote Software Training.wmv
5/21/2014 1:37 PM 1192808 CobraMote 2.1.6 Setup 32-bit.exe
5/21/2014 1:37 PM 1181293 CobraMote 2.1.6 Setup 64-bit.exe
9/8/2015 2:19 PM 20009171 CobraNet Discovery Computer Setup.wmv
2/10/2015 10:10 AM 399875 DD2305415 - Sportsound Amplifier Communication Guide.pdf
5/13/2016 10:19 AM 2197422 DD3318172 - Sportsound Amplifier Field Guide.pdf
7/17/2017 5:26 PM <dir> Monitor Panels
```

Save the appropriate "CobraMote_2.1.6_Setup_##-bit.exe" file to a known location on your computer, such as the Desktop.

If you're not sure whether your computer is 32- or 64-bit, click the **Start** button, right-click on **Computer**, and then click **Properties**. The operating system will be listed under the *System type*.

2. Once CobraMote is installed, there should be a shortcut on the Desktop. Double-click the icon to open the program.
3. To log into CobraMote (**Figure 5**), ensure the *User Type* is set to **Installer**, and then click **Sign In** (the *Password* is not required).

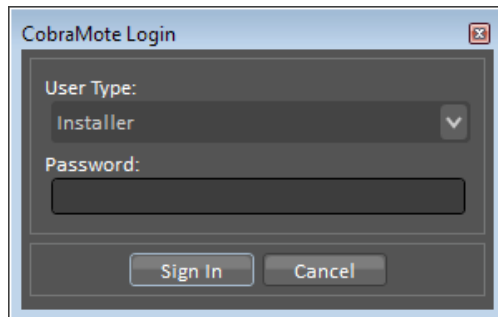
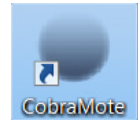


Figure 5: CobraMote Login

4. Once in CobraMote, go to **Settings > General** (**Figure 6**).
 - a. Select the *Network Adapter* you will use to connect to the amplifier(s).
 - b. Set the *Temperature Display* to **Fahrenheit**.
 - c. Set the *CobraMote Device Version* to **20a**.
 - d. Click **Save**.
5. Exit the CobraMote program.

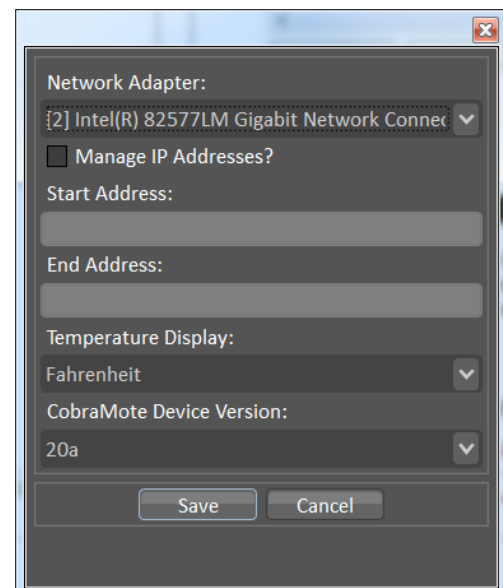


Figure 6: CobraMote Settings

3 Computer IP Settings

With all the necessary software installed, you must now change the computer's IP settings to connect to the amplifiers.

Note: You can change your IP settings each time you want to connect.

1. Go to **Start > Control Panel > Network and Sharing Center (Figure 7)**, and then click on **Change adapter settings**.

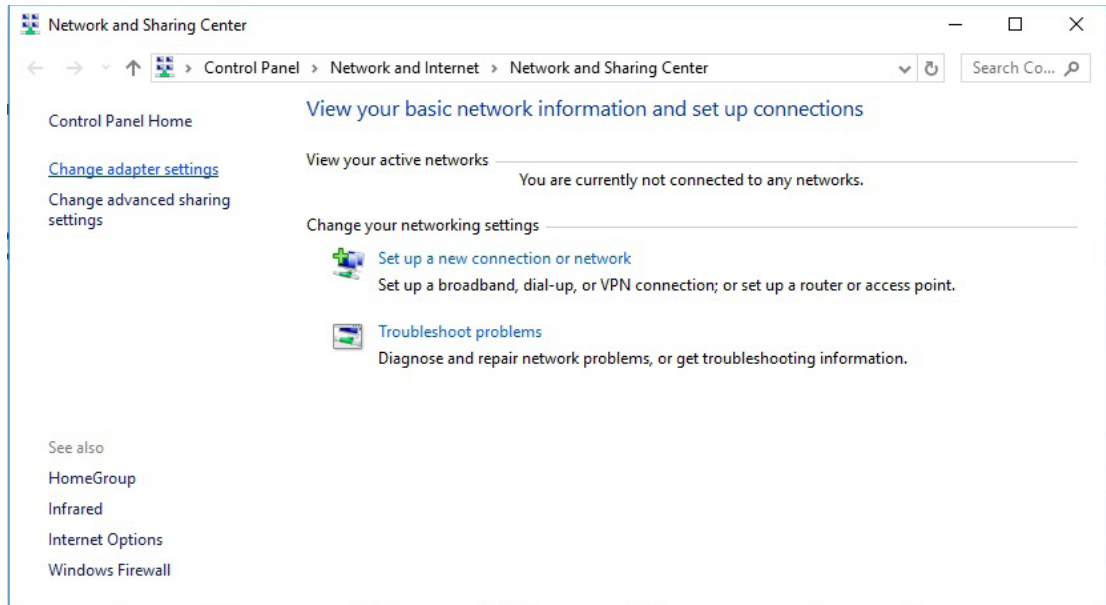


Figure 7: Network and Sharing Center

2. In the *Network Connections* window (**Figure 8**), double-click on the wired adapter that will be used to connect to the audio network.

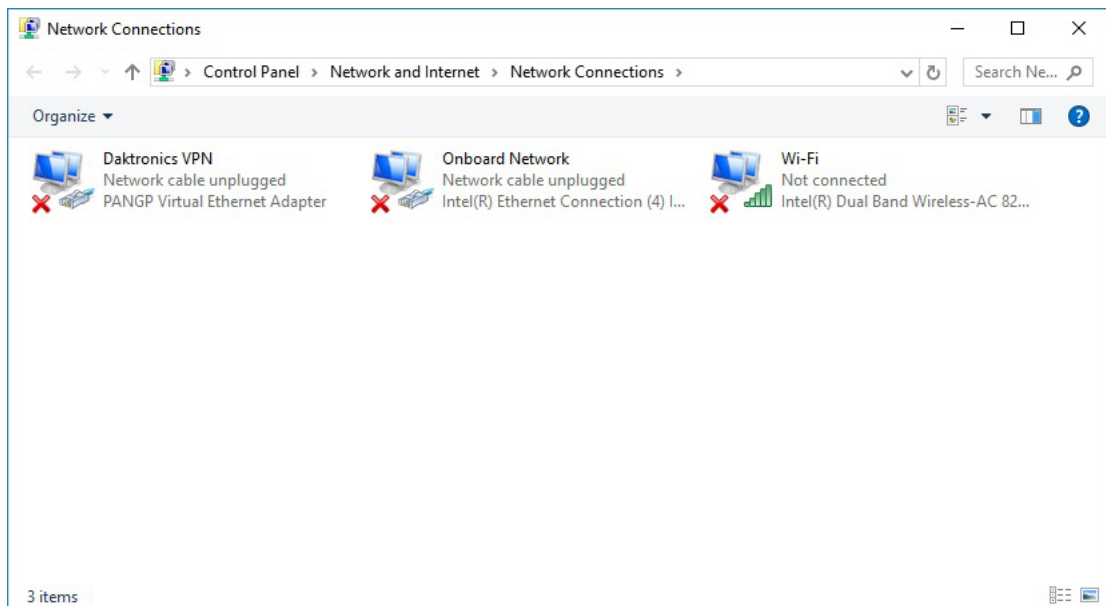


Figure 8: Network Connections

3. In the *Local Area Connection Status* window (**Figure 9**), click on **Properties**.
4. In the *Local Area Connection Properties* window (**Figure 10**), select your **Internet Protocol Version # (TCP/IP#)**, and then click **Properties**.

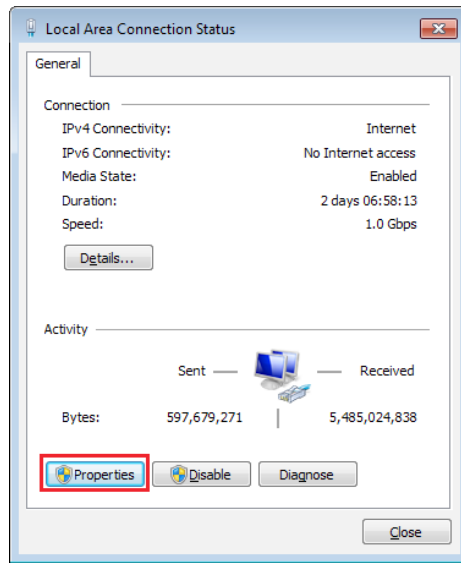


Figure 9: Local Area Connection Status

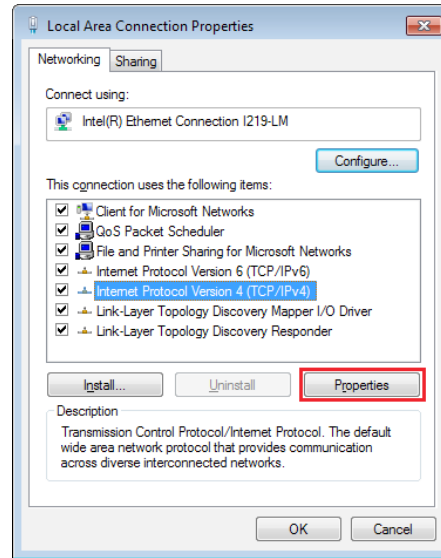


Figure 10: Local Area Connection Properties

5. In the *Internet Protocol Version # (TCP/IPv#) Properties* window (**Figure 11**), click on **Use the following IP address** and enter the IP address and Subnet mask as shown:

IP Address: 192.168. 1 .160

Subnet mask: 255.255.0.0

This configuration allows the computer to see devices across all 192.168.x.x subnets.

6. Click **OK** twice followed by **Close** when finished to save the settings.

Note: Be sure to revert to previous settings when no longer servicing audio.

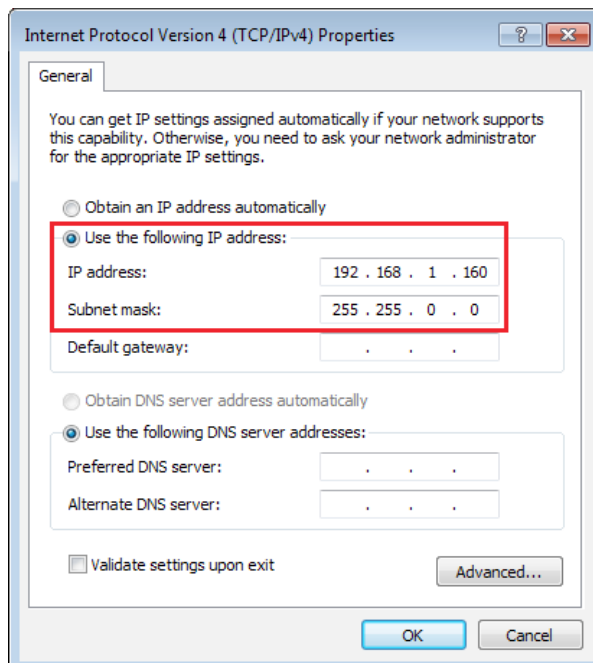


Figure 11: Internet Protocol Properties - Static IP Address

4 Updating Firmware

In Daktronics standard audio systems, amplifier firmware is used to set equalization, crossovers, limiters, delays, etc. to optimize the output of the drivers (AKA, speakers) in relation to the stadium.

Different firmware is loaded on amplifiers depending on whether the amplifier is powering a low frequency, mid frequency, or high frequency driver. Loaded firmware also depends on the type of system (SS500HD, SS1500HD, SS2000HD). **It is extremely important that the correct firmware is loaded on each amplifier for the drivers to function correctly. Improper firmware can make your system sound muddy and can damage the drivers.**

Sound cabinet monitoring is available through the Monitoring Application software. The software is specific to the cabinet type, thus there is a separate program for the SS500HD, SS1500HD, and SS2000HD. For the monitor programs to operate correctly, the sound system must have the most recent firmware version, and each amplifier must have the correct static IP addresses set. Note that each amplifier in the sound system has a unique firmware and IP address.

Verify Latest Firmware Version: REV B

1. Ensure the audio cabinet and fiber conversion box are powered on.
2. Plug your computer into the audio system network using a Cat5 Ethernet cable. Older fiber boxes have an Ethernet jack labeled **DIAGNOSTIC PORT** on the bottom (**Figure 12**); for newer fiber boxes, open the access door and connect to an open jack on the network switch (**Figure 13**).



Figure 12: Fiber Box Diagnostic Port

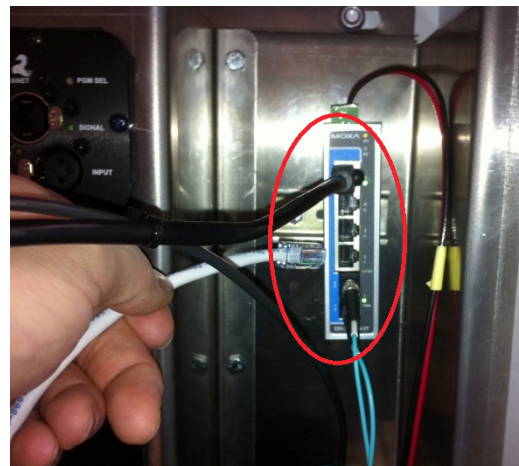


Figure 13: Fiber Box Network Switch

3. Set the IP Address for your Internet Protocol. Refer to **Section 3: Computer IP Settings (p.6)** for more information.
4. Turn off your wireless network card and quit/disable Virtual Private Network (VPN) software (such as Cisco AnyConnect or GlobalProtect), if applicable. It may also be necessary to set your laptop to “airplane” mode.
5. Open CobraNet Discovery and wait until it displays all network devices it can find. **Figure 14** shows an example from an SS1500HD system.

S	IP Address	MAC Address	errorCount	sysDescription	sysName	sysContact	sysLocation	Rx1	Tx1
✓	192.168.4.11	00602b05046d	0	Daktronics 20a SS1500 AMP1 HF Rev B CobraNet version 2.11.6 CS496112	SP1	A-2538 DSP File ER-1498851	AMP1 HF	1/1/0	0/0/0
✓	192.168.4.12	00602b05046e	0	Daktronics 20a SS1500 AMP2 MF Rev B CobraNet version 2.11.6 CS496112	SP2L	A-2538 DSP File ER-1498849	AMP2 MF	1/1/0	0/0/0
✓	192.168.4.13	00602b05046f	0	Daktronics 20a SS1500 AMP3 LF Rev B CobraNet version 2.11.6 CS496112	SP2L	A-2538 DSP File ER-1498746	AMP3 LF	1/1/0	0/0/0
✓	192.168.4.14	00602b050470	0	Daktronics 20a SS1500 AMP4 LF Rev B CobraNet version 2.11.6 CS496112	SP1	A-2538 DSP File ER-1991418	AMP4 LF	1/1/0	0/0/0
✓	192.168.1.1	00905e12d908	0	Audia EXPLO 2+2 CobraNet version 2.11.6 CS181012	Audia			0/0/0	1/4/0

IP Address FirmWare Description Amp #

Figure 14: CobraNet Discovery - SS1500HD

- Verify all network devices are being recognized in CobraNet Discovery. Refer to the table below for total number of devices within each system type:

Audio Cabinet	Amplifier(s)	Media Converter*
500HD-SL/SR	1	1
500HD-DUAL	2	1
1500HD	4	1
2000HD	10	1

* If the system does not include a fiber box, this device will not appear.

If CobraNet Discovery is not recognizing all expected network devices, refer to this video for assistance: **Troubleshooting Audio Systems - Using CobraNet Discovery Software**, located online at <https://www.daktronics.com/en-us/video-gallery/Using-CobraNet-Discovery-Software>.

- Verify CobraNet Discovery matches the following charts per the audio cabinet:

Cabinet	sysDescription	sysName	sysLocation	sysContact	Part #
500HD-SL/SR	Daktronics 20a SS500 AMP1 LMHF Rev B...	SP3	AMP1 LMHF	DSP File ER-1771025	A-3922465

Cabinet	sysDescription	sysName	sysLocation	sysContact	Part #
500HD-DUAL	Daktronics 20a SS500 AMP1 LMHF Rev B...	SP3	AMP1 LMHF	DSP File ER-1771025	A-3922465
	Daktronics 20a SS500 AMP2 MHF Rev B...	SP2H	AMP2 MHF	DSP File ER-1771028	A-3922601

Cabinet	sysDescription	sysName	sysLocation	sysContact	Part #
1500HD	Daktronics 20a SS1500 AMP1 HF Rev B...	SP1	AMP1 HF	DSP File ER-1498851	A-3922601
	Daktronics 20a SS1500 AMP2 MF Rev B...	SP2L	AMP2 MFMF	DSP File ER-1498849	A-3922601
	Daktronics 20a SS1500 AMP3 LF Rev B...	SP2L	AMP3 LFLF	DSP File ER-1498746	A-3922601
	Daktronics 20a SS1500 AMP4 LF Rev B...	SP1	AMP4 LF	DSP File ER-1991418	A-3922601

Cabinet	sysDescription	sysName	sysLocation	sysContact	Part #
2000HD	Daktronics 20a SS2000 AMP1 HF Rev B...	SP2H	AMP1 HFHF	DSP File ER-1662173	A-3922601
	Daktronics 20a SS2000 AMP2 MF Rev B...	SP2L	AMP2 MFMF	DSP File ER-1662172	A-3922601
	Daktronics 20a SS2000 AMP3 MF Rev B...	SP2L	AMP3 MFMF	DSP File ER-2159835	A-3922601
	Daktronics 20a SS2000 AMP4 MF Rev B...	SP2L	AMP4 MFMF	DSP File ER-2159841	A-3922601
	Daktronics 20a SS2000 AMP5 MF Rev B...	SP2L	AMP5 MFMF	DSP File ER-2159844	A-3922601
	Daktronics 20a SS2000 AMP6 MF Rev B...	SP2L	AMP6 MFMF	DSP File ER-2159847	A-3922601
	Daktronics 20a SS2000 AMP7 LF Rev B...	SP2L	AMP7 LFLF	DSP File ER-1662175	A-3922601
	Daktronics 20a SS2000 AMP8 LF Rev B...	SP1	AMP8 LF	DSP File ER-1991419	A-3922601
	Daktronics 20a SS2000 AMP9 LF Rev B...	SP2L	AMP9 LFLF	DSP File ER-2159852	A-3922601
	Daktronics 20a SS2000 AMP10 LF Rev B...	SP1	AMP10 LF	DSP File ER-2159854	A-3922601

If the audio cabinet chart above matches what is displayed in CobraNet Discovery, you shouldn't need to update firmware. If any part of the name does not match the table above, proceed to **Update Firmware (p.10)**.

Update Firmware

1. If not already loaded on your computer, download the latest firmware files by going to <http://dakfiles.daktronics.com> and navigate to **Audio > Servicing Sportsound Systems > Updating Firmware:**

[\[To Parent Directory\]](#)

```
5/13/2016 10:20 AM    1177648 Sportsound Firmware Files.zip
7/17/2017  5:26 PM      <dir> SS1000 Firmware
```

Download the "Sportsound Firmware Files" zip file. Right-click on the file and select **Extract All**. Click **Extract** to create a folder in the same location as the zip file.

2. Copy all firmware (.bin) files from the unzipped folder into "C:\Cirrus Logic\CobraNet Discovery\firmware" (**Figure 15**).

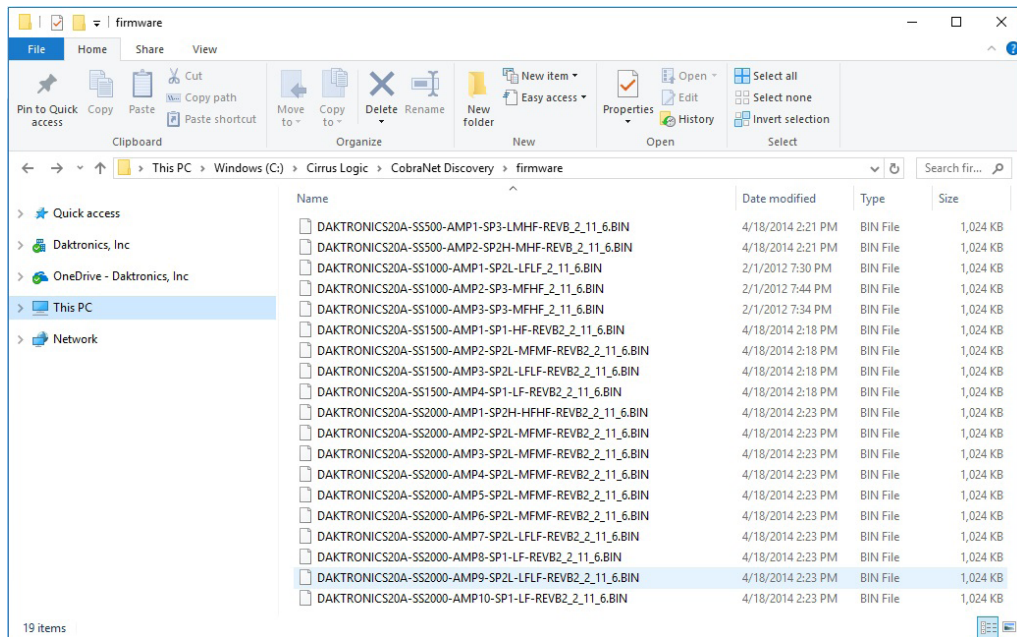


Figure 15: CobraNet Firmware Files

- In CobraNet Discovery, right-click on the amplifier that needs firmware updates, and then select **Configure**.
- In the CobraNet Configuration window (Figure 16), click **Advanced**.

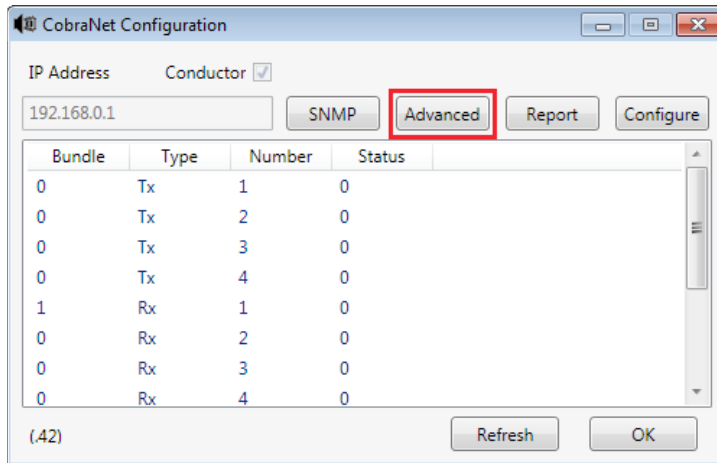


Figure 16: CobraNet Configuration

- In the Advanced Configuration window (Figure 17), ensure **Persistence** is NOT checked, and then click **OK**.

Note: If **Persistence** is checked, amplifier naming may not correctly overwrite.

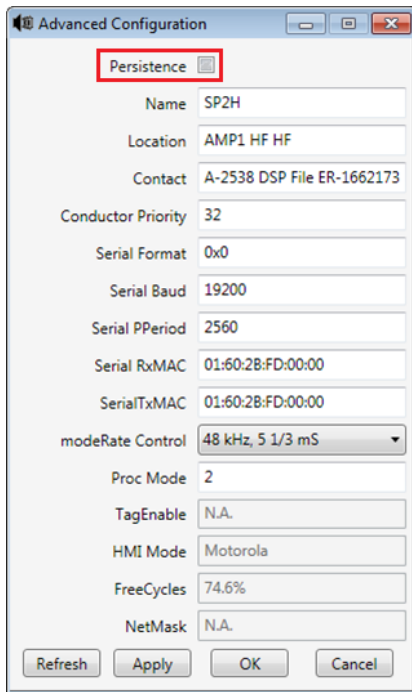


Figure 17: Advanced Configuration

6. Right-click again on the amplifier that needs firmware updates and select **Update Firmware**.
7. In the *Select Firmware Version* window (Figure 18), click on the correct firmware file to send to the amplifier. Note that you may have to first check the **Show All Firmware Version** box.

Ensure **Unconditionally** is selected for all 3 fields (*Boot Update*, *Code Update*, *Config Update*), and then click **Update**.

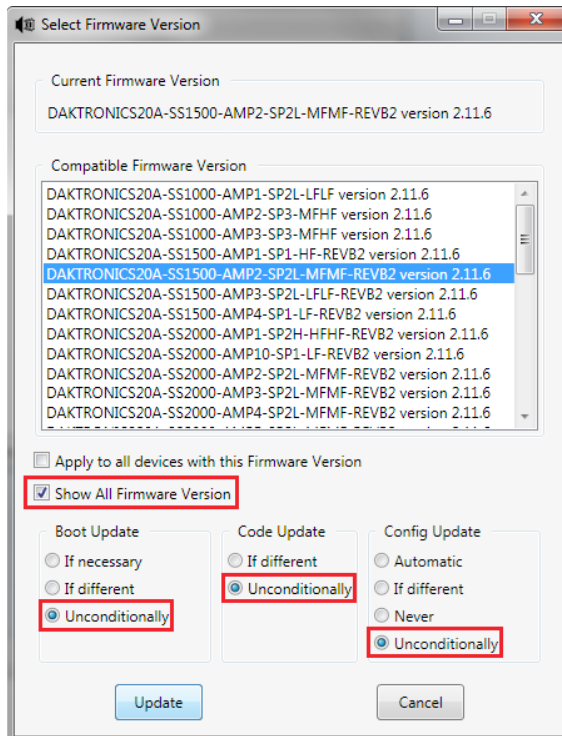


Figure 18: Select Firmware Version

Updating Firmware

Note: If you cannot update the firmware because you do not see the screen as shown above, ensure that CobraNet is correctly configured per **CobraNet Discovery (p.2)**.

8. The message shown in **Figure 19** will appear. Click **OK** to begin firmware update.

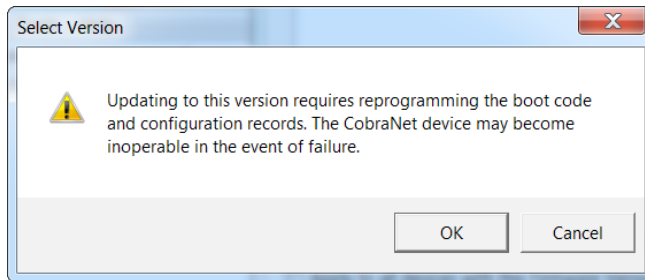


Figure 19: Select Version

9. Once the firmware update is complete, click **OK (Figure 20)**.

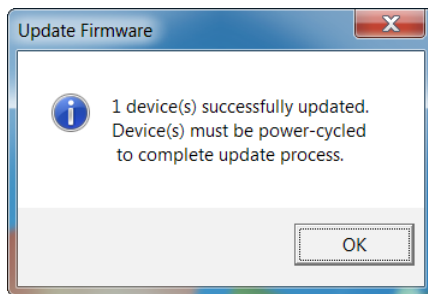


Figure 20: Update Firmware

10. After the firmware has been updated, cycle power to the amplifier. This can be done at the sound cabinet main breaker panel or by using the power switch on the amplifier.

Note: If several amplifiers require a firmware update, you can update firmware on each, then power cycle the cabinet.

11. Verify the firmware has been successfully updated in CobraNet Discovery.

Note: If your wireless card is still on, you may have to turn it off so that your computer recognizes the CobraNet device. Setting your computer to "airplane" mode and disabling the VPN are recommended.

12. Repeat **Steps 3–11** for all amplifiers that need updated firmware.

Note: The Whirlwind (EMOD) and Biamp (EXPIO) media converter devices should never be updated.

If the firmware has been updated on an amplifier, the Static IP address must be set on the amplifier to communicate with the Monitor Application. Ensure all static IP addresses are set properly as described in **Section 5: Setting Static IP Addresses for Speaker Power Amplifiers (p.14)**.

5 Setting Static IP Addresses for Speaker Power Amplifiers

For Speaker Power amplifiers, it may be necessary to change to static IP addresses as the product-specific monitor applications require them in order to be identified on the network. Older Sportsound systems prior to 2014 had IP addresses automatically assigned by CobraNet Discovery. **Updating the firmware on an amplifier will clear the static IP and it must be re-set.** Use the following instructions to set Static IP Addresses for your amplifiers.

Note: If CobraNet Discovery is not already installed, refer to **CobraNet Discovery (p.2)**.

1. Open CobraNet Discovery and go to **Tools > Preference**. In the *Disco Configuration Function Options* window (**Figure 21**), ensure that **Enable SNMP** is checked, and then click **OK**.

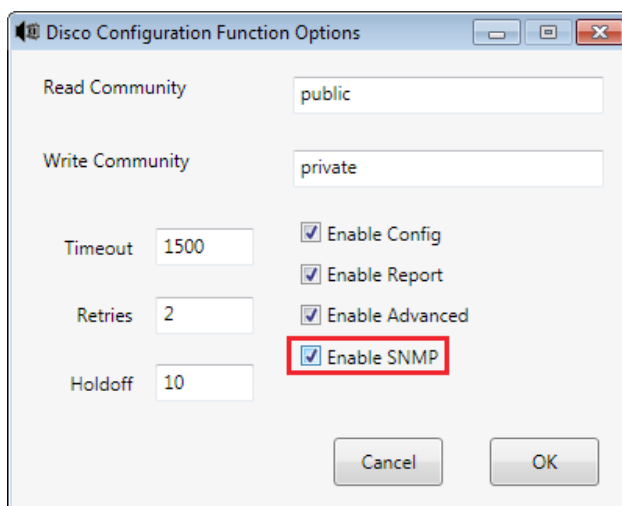


Figure 21: CobraNet Discovery Function Options

2. Right-click on the individual amplifier for which you want to set a static IP address and select **Configure**.
3. In the *CobraNet Configuration* window (**Figure 16**), click **Advanced**.
4. In the *Advanced Configuration* window (**Figure 17**), ensure **Persistence** is checked, and then click **OK**. Having **Persistence** checked allows the amplifier to keep the IP address settings as well as Name, Location, and Contact information after power is cycled.
5. Back in the *CobraNet Configuration* window (**Figure 16**), click **SNMP**.
6. In the *Generic SNMP R/W* window (**Figure 22**), verify the following settings:

Group = **Monitor**

Variable = **ipMonStaticIP**

Press **Get** and "0.0.0.0" should appear as the *Value*.

Note that the *Type* field and **RO** checkbox will automatically change their values when *Group* and *Variable* are set correctly.

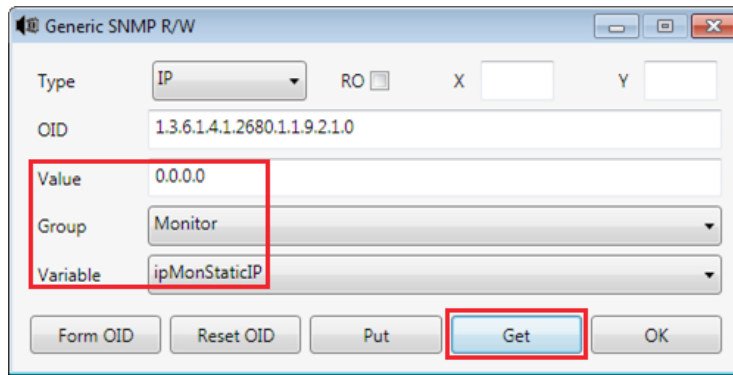


Figure 22: Generic SNMP - Get

Change the *Value* per the cabinet and amplifier # in the chart below, then click **Put** (Figure 23).

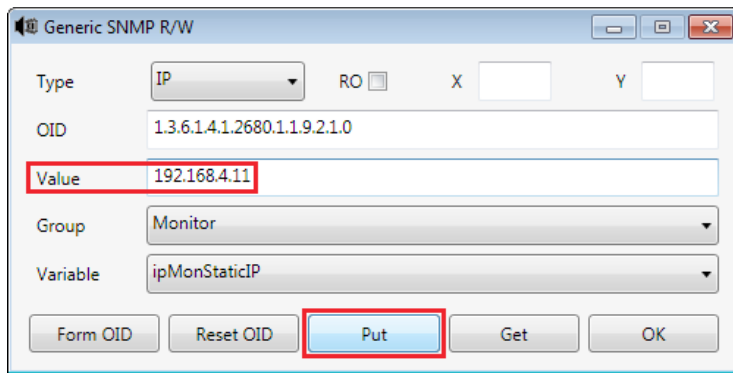


Figure 23: Generic SNMP - Put

Cabinet	Amplifier #	Static IP Address
500HD	AMP 1 SP3	192.168.4.11
	AMP 2 SP2H	192.168.4.12
1500HD	AMP 1 SP1	192.168.4.11
	AMP 2 SP2L	192.168.4.12
	AMP 3 SP2L	192.168.4.13
	AMP 4 SP1	192.168.4.14
2000HD	AMP 1 SP2H	192.168.4.11
	AMP 2 SP2L	192.168.4.12
	AMP 3 SP2L	192.168.4.13
	AMP 4 SP2L	192.168.4.14
	AMP 5 SP2L	192.168.4.15
	AMP 6 SP2L	192.168.4.16
	AMP 7 SP2L	192.168.4.17
	AMP 8 SP1	192.168.4.18
	AMP 9 SP2L	192.168.4.19
	AMP 10 SP1	192.168.4.20

Click **OK** twice to get to back to main menu.

7. Cycle power to the amplifier. This can be done at the sound cabinet main breaker panel or by using the power switch on the amplifier.

Note: If several amplifiers require static IP addresses to be set, you can set the IP address of each, and then cycle power to the whole audio cabinet.

8. Verify the static IP address is shown correctly in CobraNet Discovery.
9. Repeat **Steps 2–8** for all amplifiers that need static IP addresses set.

Note: It is not necessary to set the IP address for Whirlwind (EMOD) or Biamp (EXPIO) media converter devices.

6 Monitor Application Overview

Daktronics Monitor Applications allow you to communicate with the amplifiers to help determine whether your amplifiers and drivers are working properly in the sound cabinet.

Every new standard outdoor system (500HD, 1500HD, 2000HD) which has a fiber box in the control room should have Monitor Application diagnostic capability. By updating the amplifier firmware and IP addresses of older systems per the appropriate sections of this manual, they will also be able to take advantage of the Monitor Applications.

Refer to **Figure 24** for an overview of the features of the 1500HD monitor application.

Note: If any of the amplifiers do not display the proper IP address or any part of the firmware as outlined in **Updating Firmware (p.8)** and **Setting Static IP Addresses for Speaker Power Amplifiers (p.14)**, the monitor panel application will not correctly function.

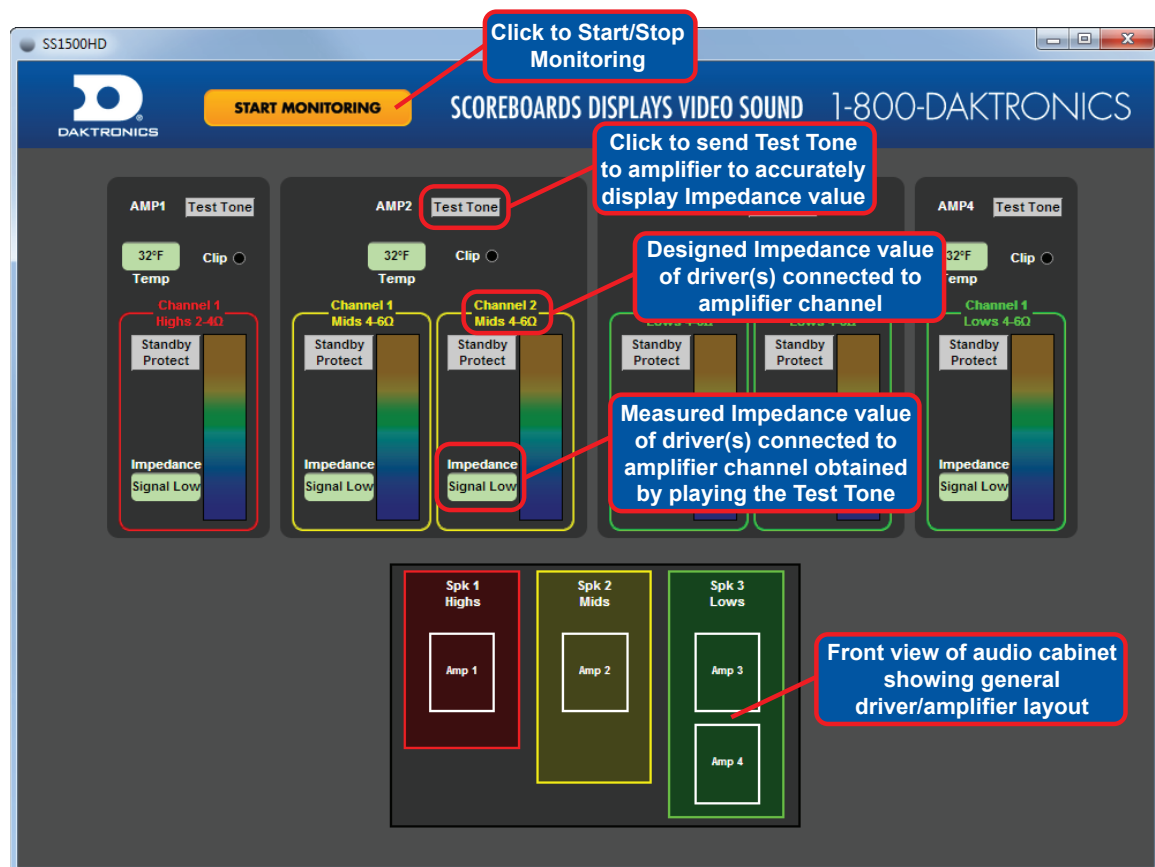


Figure 24: Monitor Application Overview

For more information, refer to this video for assistance: **Sportsound Monitor Application Operation**, located online at <https://www.daktronics.com/en-us/video-gallery/Sportsound-Monitor-Application-Operation>.

7 Amplifier Troubleshooting

Some examples of reported symptoms related to an amplifier issue:

- No sound (no lows, no mids, no highs) or reduced sound level at certain frequencies (certain channels not functioning properly)
- Noise emits from system without a source playing (bad amplifier introducing noise to adjacent good amplifiers)
- Amplifier/system does not produce sound after being left on for extended period of time
- System produces a loud “thump” or noise during power on/off
- A replacement amplifier only works in analog backup mode

No Sound or Reduced Sound at Certain Frequencies

Do all amplifiers show up in CobraNet Discovery when connected to the audio network?

If none of the devices are registering in CobraNet Discovery, there is a network/communication connectivity issue. Likely causes/remedies are as follows:

- Internet Protocol Settings are incorrect. Refer to **Section 3: Computer IP Settings (p.6)**.
- CobraNet Discovery Settings are incorrect. Refer to **CobraNet Discovery (p.2)**.
- Wireless Network is connected. Disable the connection.
- Virtual Private Network (VPN) is connected. Disable the connection.

If some amplifier devices are missing, first try to:

- Refresh CobraNet Discovery screen.
- Cycle power to amplifiers/audio cabinet.

If devices are still missing, the amplifiers in the audio cabinet (**Figure 25**) must be accessed to further troubleshoot the problem:

1. Check that the amplifier power switch is turned on.
2. Verify amplifier is powered up and the correct indicator lights are lit. Refer **Amplifier Indicator Lights (p.24)**.
3. Check voltage selector switch is set correctly on amplifier and slid all the way up/down. Refer to the table at right.

Note: Amps shipped after September 2018 feature auto-sensing power supplies without voltage selector switches.

Amplifier Voltage Selector Switch Setting by System Type	
500HD	115V
1500HD (on trailer)	Refer to generator setting
1500HD	230V
2000HD	230V

4. Check incoming voltage on blue PowerCon input cable. Refer to the table at right.
5. Check that the amplifier fuse is good.
6. If all checks are correct, but amplifier is not turning on, it must be replaced.

To determine correct amplifier part numbers, compare amplifiers listed in CobraNet Discovery with amplifiers listed in **Verify Latest Firmware Version: REV B (p.8)**.

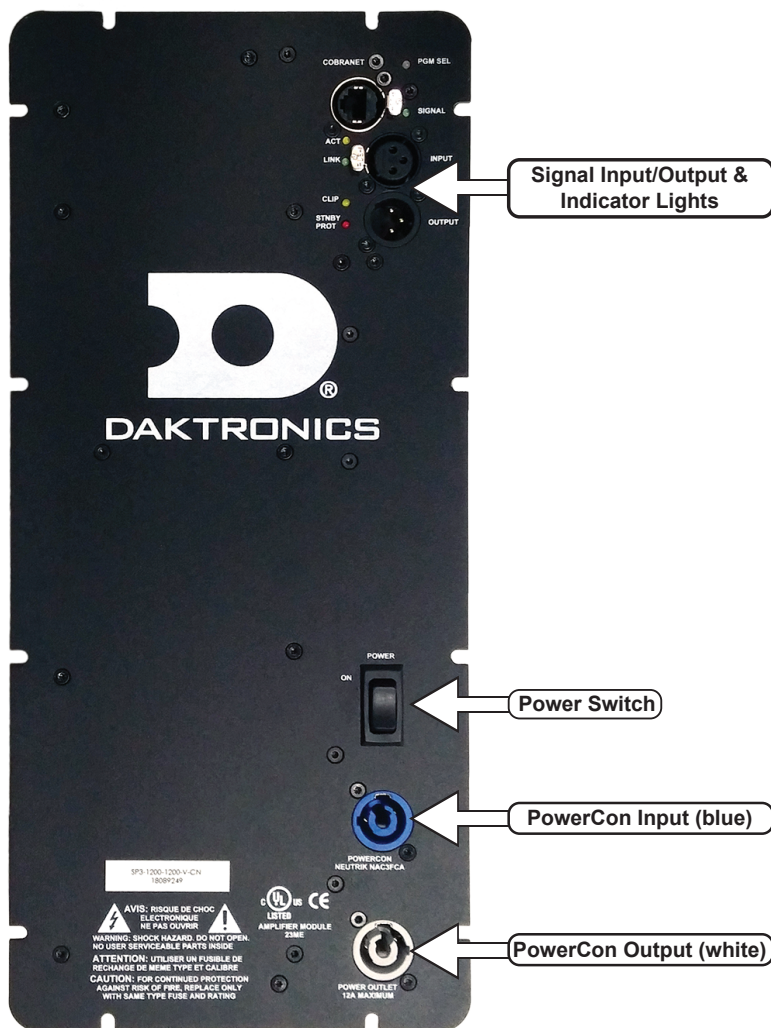


Figure 25: Amplifier Connectors, Indicators, & Switches

Amplifier powers up, but is still not being recognized in CobraNet Discovery:

- If system has an analog backup, switch to analog mode at the fiber box. If the problem goes away, it's possibly a network cable issue between amplifier and control enclosure network switch.
- Verify amplifier network connectivity:
 - a. Verify ACT and LINK indicator lights are illuminated. Refer to **Amplifier Indicator Lights (p.24)**.
 - b. Check network cable connections between amplifier and switch; swap network cable from questionable amplifier with one from a working/reporting (in CobraNet) amplifier.
 - c. Connect computer directly to the amplifier CobraNet port.

If the amplifier is still not recognized in CobraNet Discovery, or the LINK indicator is not lit, the CobraNet chip cannot connect, and the amplifier must be replaced.

If all amplifier devices appear in CobraNet Discovery, but system still suggests an amplifier issue, use the monitoring application for further troubleshooting.

All the amplifier devices must have the static IP address set correctly prior to using the monitoring application. Refer to **Section 5: Setting Static IP Addresses for Speaker Power Amplifiers (p.14)**.

With a source (music) playing at a moderate level through system, use the specific Sportsound monitor application to verify all channels of amplifiers are functioning correctly.

1. Click **Start Monitoring**.
2. Click **Standby Protect** to mute all channels, and then un-mute one at a time and listen for audio.

If audio is present on each channel, all amplifier channels are outputting.

In the monitor application (**Figure 26**), click the **Test Tone** button for each amplifier and record the value of the impedance after it stabilizes. The value should be close to the value shown below the *Channel #*. The image below shows a 1500HD system with the impedance values for each amplifier channel after playing the appropriate test tones.

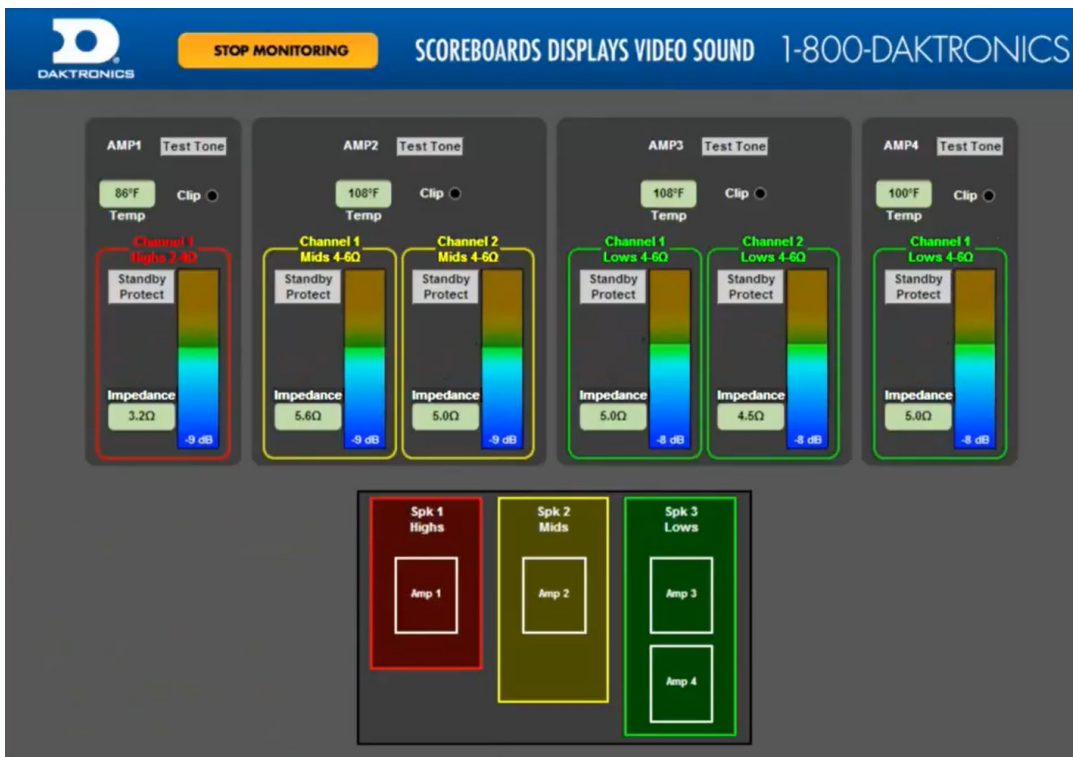


Figure 26: Monitor Application - 1500HD

If the Test Tone shows “Open” on channel(s), the amplifier and drivers must be accessed to further troubleshoot the problem.

Is the amplifier **PROTECT** light illuminated? (ON indicates a fault)

- If yes, cycle power and see if it stays illuminated.
- Ensure the amplifier channel 1 is not muted in the monitor application or CobraMote.
- Remove amplifier from speaker assembly and measure DC output voltage.
- If DC measurement indicates a problem, the amplifier must be replaced.

Amplifier Troubleshooting

Measuring Amplifier DC Output Voltage

With the amplifier on and no signal applied or drivers connected, measure the DC Voltage from each amplifier output pin to the gold colored chassis. If the DC voltages differ from chart below, amplifier is faulty and must be replaced.

Amplifier	Part #	DC Output on Pins	
SP1 500 (Legacy)	A-2296	CH-1	40-45 VDC
		CH+1	40-45 VDC
		CH-2	0 VDC
		CH+2	0 VDC
		CH-3	0 VDC
		CH+3	0 VDC
SP1 1000 (Legacy)	A-2469	CH-1	60-65 VDC
		CH+1	60-65 VDC
		CH-2	0 VDC
		CH+2	0 VDC
		CH-3	0 VDC
		CH+3	0 VDC
SP2 500/500 (Legacy)	A-2538	CH-1	40-45 VDC
		CH+1	40-45 VDC
		CH-2	0 VDC*
		CH+2	0 VDC*
		CH-3	40-45 VDC
		CH+3	40-45 VDC
SP2 1000/500 (Legacy)	A-2216	CH-1	60-65 VDC
		CH+1	60-65 VDC
		CH-2	0 VDC
		CH+2	0 VDC
		CH-3	40-45 VDC
		CH+3	40-45 VDC
SP2 1000/1000 (Legacy)	A-2470	CH-1	60-65 VDC
		CH+1	60-65 VDC
		CH-2	60-65 VDC
		CH+2	60-65 VDC
		CH-3	0 VDC
		CH+3	0 VDC
SP3 1000/ 1000/ 500 (Legacy)	A-2611	CH-1	60-65 VDC
		CH+1	60-65 VDC
		CH-2	60-65 VDC
		CH+2	60-65 VDC
		CH-3	40-45 VDC
		CH+3	40-45 VDC
SP3 1000/ 500/500 (Legacy)	A-3636	CH-1	60-65 VDC
		CH+1	60-65 VDC
		CH-2	40-45 VDC
		CH+2	40-45 VDC
		CH-3	40-45 VDC
		CH+3	40-45 VDC

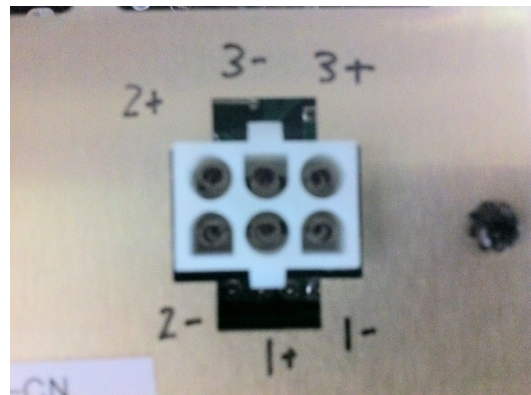


Figure 27: Amplifier Output (Legacy)



Figure 28: Measuring DC Voltage (Legacy)

With the amplifier on and no signal applied or drivers connected, measure the DC Voltage from each amplifier output pin to the gold colored chassis. If the DC voltages differ from chart below by +/-2V, amplifier is faulty and must be replaced.

Amplifier	Part #	DC Output on Pins	
SP3 1200-1200- 400	A-3922465	CH-1	0 VDC
		CH+1	0 VDC
		CH-2	0 VDC
		CH+2	0 VDC
		CH-3	+31 VDC
		CH+3	+31 VDC
SP2 1200-1200	A-3922601	CH-1	0 VDC
		CH+1	0 VDC
		CH-2	0 VDC
		CH+2	0 VDC
		CH-3	0 VDC
		CH+3	0 VDC

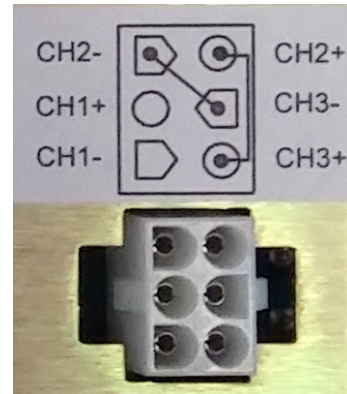


Figure 29: Amplifier Output

Noise Emits from System with No Source Playing

In CobraNet Discovery, verify all amplifier devices are present. If one amplifier is missing, it's likely that amplifier is emitting noise to the rest of the system via the XLR output. Open CobraMote (**Figure 30**) and see if signal is present without a source playing.

1. Turn the mixer output slider all the way down or disconnect control rack from fiber conversion box.
2. **Scan** for devices.
3. Select device in *Device(s)* column.
4. See if signal bar indicator *IN* has a signal present on each device.
5. If **Step 4** is positive, the noise can be removed by turning the power switch of the bad amplifier to OFF.
6. If **Step 5** eliminates the noise, the missing amplifier must be replaced.

If all amplifiers are present in CobraNet Discovery, close the program, and open CobraMote (**Figure 30**) to see which amplifier is emitting noise.

1. Turn the mixer output slider all the way down or disconnect control rack from fiber conversion box.
2. **Scan** for devices.
3. Select device in *Device(s)* column.
4. See if signal bar indicator *IN* has a signal present on each device.
5. If **Step 4** is positive, the noise can be removed by turning the power switch of the amplifier creating noise to OFF. If access to inside of cabinet is not possible, you can press the **Mute** button in CobraMote. If the amplifier needs to stay temporarily muted, go to **DSP** tab and save changes to device.
6. If **Step 5** eliminates the noise, the amplifier creating noise must be replaced. If **Step 5** eliminates some but not all of the noise, then it's more than likely a different amplifier in the system that has a problem. Undo changes to the current amplifier and go to the next device. It is best practice to start with AMP1 in the system and work your way to the last amplifier in the system.

Amplifier Troubleshooting

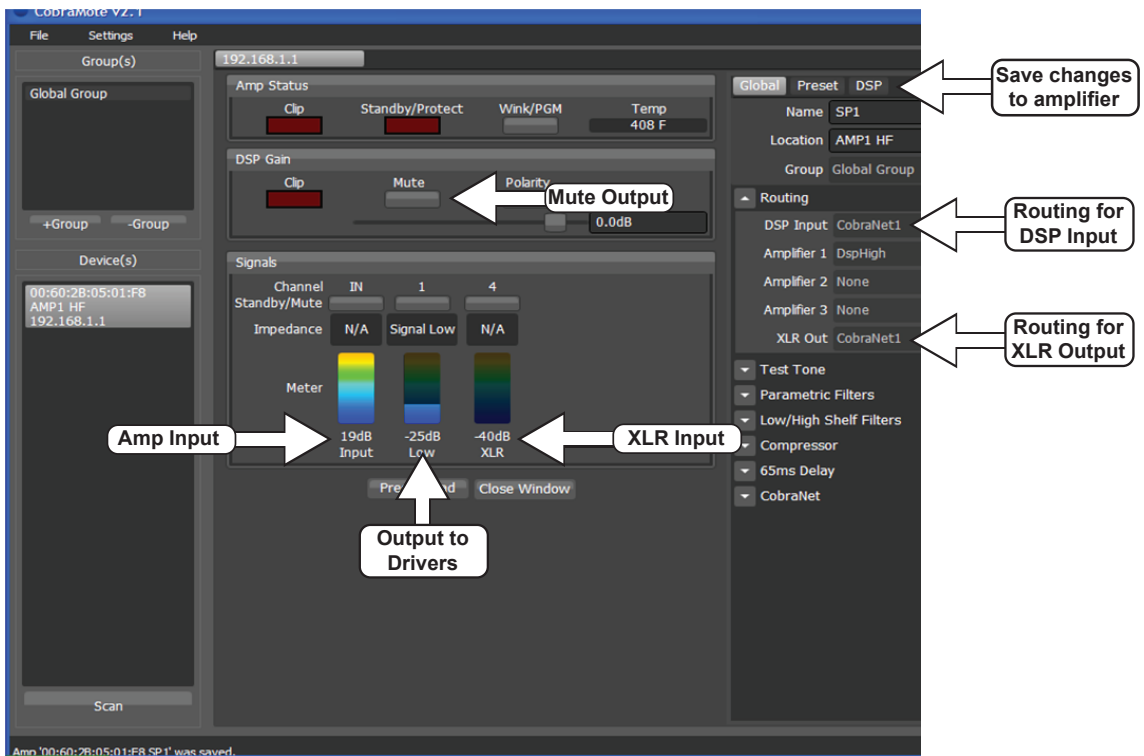


Figure 30: CobraMote Devices

No Sound After System Left ON

Verify system is operating properly after a power cycle.

Cycle power to entire sound system and verify amplifiers/drivers that were not working are now producing sound correctly.

If yes, update firmware on affected amplifiers. Refer to **Section 4: Updating Firmware (p.8)**. If firmware has been updated on one amplifier, ensure the newest firmware is updated on all amplifiers.

“Thump” or Noise During Power On/Off

- Refer to control equipment manuals for proper order of power on/off procedure and see if problem is eliminated.
- If proper procedure is followed, one of the amplifier **DSP/LOOPING** buttons (**Figure 31**) may be stuck between fully out/fully in position. Access to cabinet is required to troubleshoot further. Refer to system riser drawings to understand which amplifiers should be in **LOOPING** and which ones should be in **DSP**.

Note: Systems built after January 2014 no longer have the **DSP/LOOPING** button.



Figure 31: DSP/LOOPING (Legacy)

- **LOOPING** mode: If the button is not depressed (OUT), the male XLR connector is electrically coupled to the input.
- **DSP** mode: If the button is depressed (IN), the male XLR connector will output a filtered signal from the DSP chip. For example, use in the event you want to reroute a channel's pre-amplified signal to the male XLR connector.

Replaced amplifier only works in analog backup mode

An amplifier was recently replaced and will only output audio when in analog backup mode, or when the test tone function is used in the monitor panel.

Does the replacement amplifier display the proper information in every column of CobraNet Discovery?

Verify that Rx column values are set to 1/1/0. If not, try loading new firmware and then setting the static IP address. Refer to the following video:

<https://www.daktronics.com/en-us/video-gallery/Using-CobraNet-Discovery-Software>

Amplifier Indicator Lights

This section describes the indicator lights on the front panel of Speaker Power's CobraMote model amplifiers. There are (6) LEDs on the front panel, as shown in **Figure 32** and described below:

1. **PGM SEL:** The program select light indicates which version of programming the amplifier has. It is not indicative of an action by the amplifier; it is for reference. It can be used with the **Wink/PGM** button in the CobraMote software to locate the amplifier in a large system.
2. **SIGNAL:** The signal light indicates the presence of an input signal via the input XLR (not CobraNet).
3. **ACT:** The ACT light should always be active. Either it will blink when an Ethernet connection is made or it remains solid on without a connection.
4. **LINK:** The LINK light will blink with the ACT light when an Ethernet connection is made. It will remain off if there is no connection.
5. **CLIP:** The CLIP light is driven by the primary internal amplifier module and indicates the input level is too high and the amplifier is clipping.
6. **STNBY / PROT:** The standby/protect light indicates the amplifier is in protect mode or channel 1 is muted. It will be on if the amplifier has shut itself down because of a fault, if all channels are put into standby via CobraMote software, or if only channel 1 is muted via software. It will remain off during normal operation or when all channels are muted simultaneously via CobraMote software.

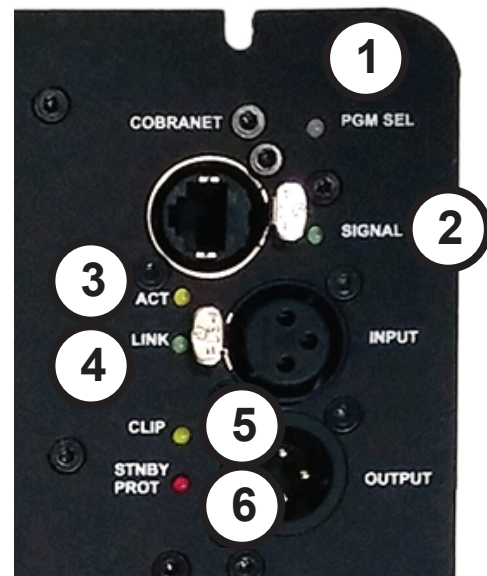


Figure 32: Amplifier Indicator Lights

8 SS1000 (Non-CobraNet) Amplifier Replacement

This section describes amplifier replacement for legacy Sportsound 1000 series audio cabinets. These legacy amplifiers will be replaced with CobraNet amplifiers.

Note: For amplifier replacement in 500HD, 1500HD, or 2000HD systems, refer to the product manuals.

Recommended tools: #2 Phillips Screwdriver, 7/16 Wrench

1. Remove 4 front mesh bolts with 7/16 wrench to access amplifiers from the front. The mesh weighs 30 lb (14 kg).
2. Locate the defective amplifier, if not already known. Note that these amplifiers will go into standby when the rack is switched off.
 - a. Check for drivers not producing sound. Refer to **Sportsound Driver Troubleshooting (DD2383092)**, available online at www.daktronics.com/manuals, to see if there might be a driver issue rather than an amplifier issue.
 - b. Power on amplifiers one at a time.
3. Verify the new amplifier is the correct replacement part number:

Product	Amplifier	Quantity	Replacement	Label
SS1000	A-2165	1	A-2470	AMP1
	A-2166	2	A-2611	AMP2

4. Remove the defective amplifier.
 - a. Remove the 12 machine screws holding the amplifier in with the #2 screwdriver.
 - b. Carefully pull out on the amplifier, taking care not to break any cables inside the cabinet. It may be necessary to use a flathead screwdriver to pry the amplifier loose; the power cords can also be used to assist in pulling out the amplifier.
 - c. Unplug all power and signal cables.
 - d. Unplug the 6-pin connector from the back of the amplifier.
5. Install the new amplifier.
 - a. Verify power selector switch is set to correct voltage (115V) as needed.
 - b. Check to see if existing weather stripping is present, or install new weather stripping.
 - c. Verify wires are still connected to the 6-pin connector, and plug it into the amplifier.
 - d. Re-connect all power and signal cables, including the standby harness.
 - e. Position the amplifier and reinstall the 12 machine screws with the #2 screwdriver.
6. Follow **Section 4: Updating Firmware (p.8)** to verify that the correct firmware has been loaded by Daktronics Customer Service. All amplifiers present should have the firmware verified and updated to the most current version available.