

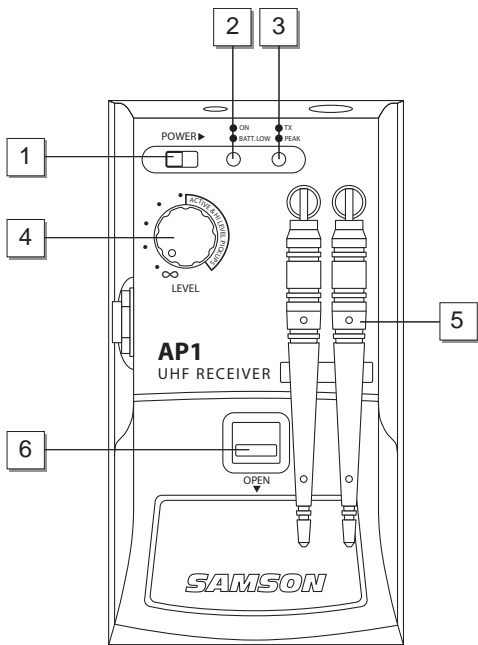
# AirLine

## UHF Wireless System Owners Manual

- AF1 Instrument Transmitter
- AG1 Instrument Transmitter
- AP1 Receiver
- AP1B Receiver
- UR1 Receiver



**SAMSON**



**1: Power switch** - Move this switch in the direction of the arrow to turn power to the AP1 on; move it away from the arrow to turn power off. (A jack must be inserted into the input connector for the receiver to power up.)

**2: Power On / Battery Low LED** - This LED lights green whenever the AP1 is powered on and it lights red whenever the battery in the AP1 is running low. In order to avoid compromising audio fidelity (or having the AP1 stop working completely), you should always replace the battery with a fresh one immediately whenever this LED lights red.

**3: TX / Peak LED** - This LED lights green whenever the AP1 is receiving RF signal from a transmitter and it lights red when output signal from the AP1 is at the onset of clipping (that is, when it is on the verge of being distorted). If you see this light during operation, lower the volume level of your instrument or switch on the transmitter's 15 dB pad. For more information, see the section entitled "Setting Up and Using Your AirLine System" on page 15 in this manual.

**4: Level control** - This knob sets the level of the audio signal being output through the AP1 output jack (see #9 on page 9). When using an electric guitar or bass with an active or high-level pickup, set the knob in the marked area. For more information, see the section entitled "Setting Up and Using Your AirLine System" on page 15 in this manual.

# Guided Tour - AP1 Receiver

Samson AirLine

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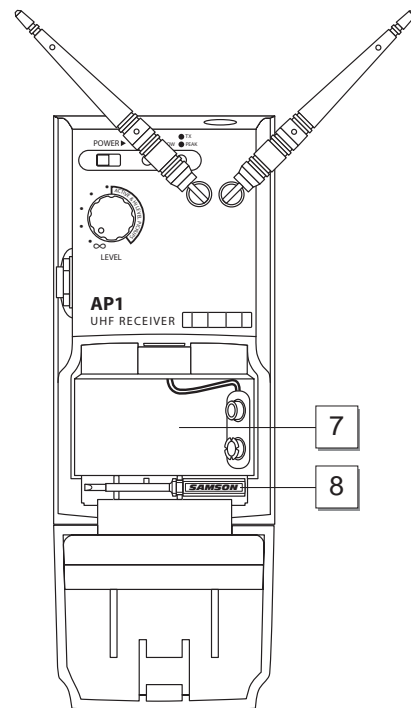
**5: Antennas** - Swivel mounting allows full rotation for optimum positioning of the dual AP1 antennas. In normal operation, extend both antennas vertically and spread the tips horizontally outwards approximately 5 inches. For convenience, they can be folded inward when transporting the AP1. See the “Setting Up and Using Your AirLine System” section on page 15 in this manual for more information about antenna positioning.

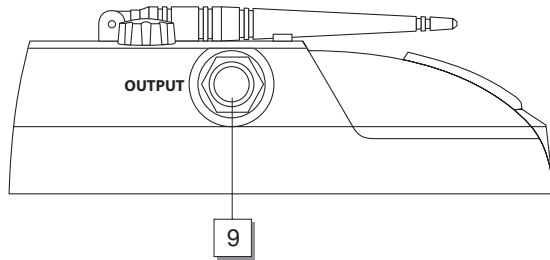
**6: Battery compartment latch** - Press gently on this latch to open the AP1 battery compartment (see #7 below).

**7: Battery compartment** - Insert a standard 9-volt alkaline battery here, being sure to observe the plus and minus polarity markings shown. We recommend the Duracell MN 1604 type battery. Although rechargeable Ni-Cad batteries can be used, they do not supply adequate current for more than four hours.

**WARNING:** Do not insert the battery backwards; doing so can cause severe damage to the AP1 and will void your warranty. Note that the AP1 can also be AC powered with the use of an optional 12 volt adapter available from your Samson dealer (see #10 on the following page).

**8: Plastic screwdriver** - Specially designed for use in adjusting the AP1 Squelch control (see #11 on the following page). See the “Setting Up and Using Your AirLine System” section on page 15 in this manual for more information.

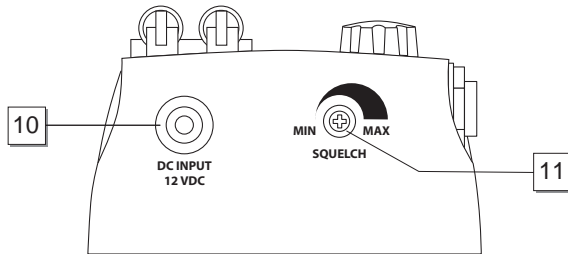




**9: Output jack** - Use this standard unbalanced high impedance (5 - 10 K Ohm) 1/4" jack to connect the AP1 to your amplifier or audio mixer. Wiring is as follows: tip hot, sleeve ground.

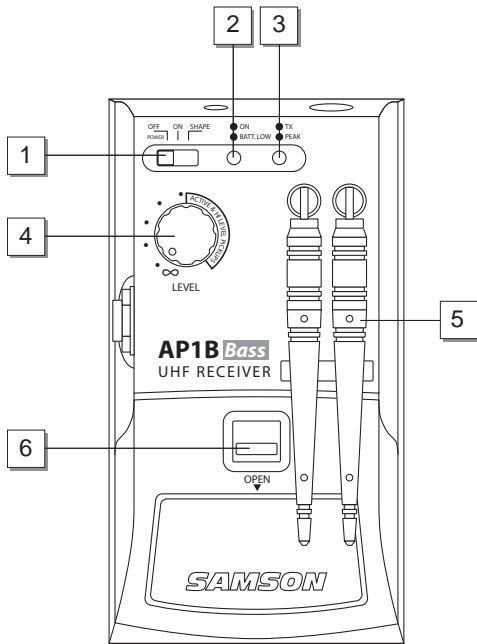
**10: DC input** - Connect an optional 12 volt 200 mA power adapter (available from your Samson dealer) here.

**WARNING:** Do *not* substitute any other kind of power adapter; doing so can cause severe damage to the AP1 and will void your warranty. Note that the AP1 can also be battery powered (see #7 on the previous page and the "Setting Up and Using Your AirLine System" section on page 15 in this manual).



**11: Squelch control** - This control determines the maximum range of the AP1 before audio signal dropout. Although it can be adjusted using the supplied plastic screwdriver, it should normally be left at its factory setting. See the "Setting Up and Using Your AirLine System" section on page 15 in this manual for more information.

# Guided Tour - AP1B Receiver *Samson AirLine*



**1: Power On-Off / Shape switch** - Move this switch to the ON position to turn power to the AP1B on; move it to the SHAPE position to engage the shape circuitry yielding a fat bottom end and fullness in tone; move it back towards the OFF position to turn power off. (A jack must be inserted into the input connector for the receiver to power up.)

**2: Power On / Battery Low LED** - This LED lights green whenever the AP1B is powered on and it lights red whenever the battery in the AP1B is running low. In order to avoid compromising audio fidelity (or having the AP1B stop working completely), you should always replace the battery with a fresh one immediately whenever this LED lights red.

**3: TX / Peak LED** - This LED lights green whenever the AP1B is receiving RF signal from a transmitter and it lights red when output signal from the AP1B is at the onset of clipping (that is, when it is on the verge of being distorted). If you see this light during operation, lower the volume level of your instrument or switch on the transmitter's 15 dB pad. For more information, see the section entitled "Setting Up and Using Your AirLine System" on page 15 in this manual.

**4: Level control** - This knob sets the level of the audio signal being output through the AP1B output jack (see #9 on page 9). When using an electric guitar or bass with an active or high-level pickup, set the knob in the marked area. For more information, see the section entitled "Setting Up and Using Your AirLine System" on page 15 in this manual.

# Samson AirLine Guided Tour - AP1B Receiver

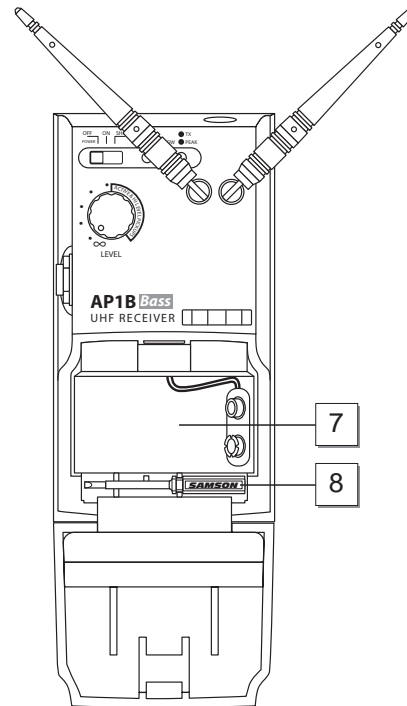
**5: Antennas** - Swivel mounting allows full rotation for optimum positioning of the dual AP1B antennas. In normal operation, extend both antennas vertically and spread the tips horizontally outwards approximately 5 inches. For convenience, they can be folded inward when transporting the AP1B. See the “Setting Up and Using Your AirLine System” section on page 15 in this manual for more information about antenna positioning.

**6: Battery compartment latch** - Press gently on this latch to open the AP1B battery compartment (see #7 below).

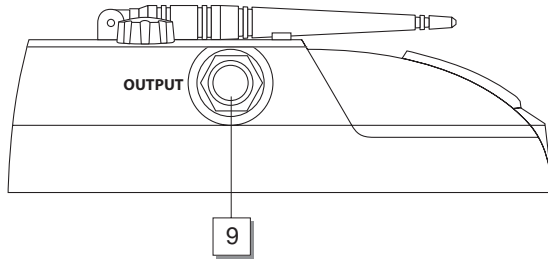
**7: Battery compartment** - Insert a standard 9-volt alkaline battery here, being sure to observe the plus and minus polarity markings shown. We recommend the Duracell MN 1604 type battery. Although rechargeable Ni-Cad batteries can be used, they do not supply adequate current for more than four hours.

**WARNING:** Do not insert the battery backwards; doing so can cause severe damage to the AP1B and will void your warranty. Note that the AP1B can also be AC powered with the use of an optional 12 volt adapter available from your Samson dealer (see #10 on the following page).

**8: Plastic screwdriver** - Specially designed for use in adjusting the AP1B Squelch control (see #11 on the following page). See the “Setting Up and Using Your AirLine System” section on page 15 in this manual for more information.

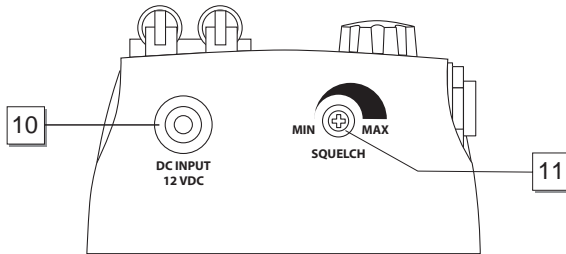


# Guided Tour - AP1B Receiver *Samson AirLine*



**9: Output jack** - Use this standard unbalanced high impedance (5 - 10 K Ohm) 1/4" jack to connect the AP1B to your amplifier or audio mixer. Wiring is as follows: tip hot, sleeve ground.

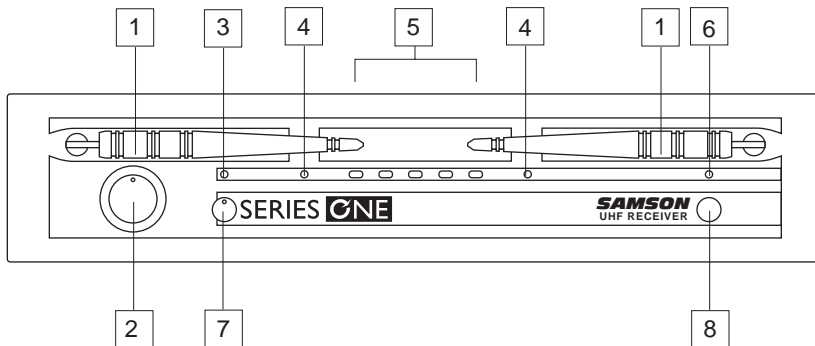
**10: DC input** - Connect an optional 12 volt 200 mA power adapter (available from your Samson dealer) here. **WARNING:** Do *not* substitute any other kind of power adapter; doing so can cause severe damage to the AP1B and will void your warranty. Note that the AP1B can also be battery powered (see #7 on the previous page and the "Setting Up and Using Your AirLine System" section on page 15 in this manual).



**11: Squelch control** - This control determines the maximum range of the AP1B before audio signal dropout. Although it can be adjusted using the supplied plastic screwdriver, it should normally be left at its factory setting. See the "Setting Up and Using Your AirLine System" section on page 15 in this manual for more information.

# Samson AirLine Guided Tour - UR1 Receiver / Front Panel

**1: Antennas (A and B)** - The antenna mountings allow full rotation for optimum placement. In normal operation, both Antenna A (the antenna on the left) and Antenna B (the antenna on the right) should be placed in a vertical position. Both antennas can be folded inward for convenience when transporting the UR1. See the “Setting Up and Using the AirLine System” section on page 15 in this manual for information about antenna installation and positioning.



**2: AF (Audio Frequency) Level control** - This knob sets the level of the audio signal being output through both the balanced and unbalanced output jacks on the rear panel (see #2 and #4 on page 12 in this manual). Reference level is obtained when the knob is turned fully clockwise (to its “10” setting).

**3: Peak LED** - This LED lights yellow when output signal from the UR1 is at the onset of clipping (that is, when it is on the verge of being distorted). If you see this light during operation, move the microphone further away or lower the output level of your instrument or transmitter. For more information, see the section entitled “Setting Up and Using the AirLine System” on page 15 in this manual.



# Guided Tour - UR1 Receiver / Front Panel *Samson AirLine*

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**4: A/B Receiver LEDs** - When signal is being received, one of these will be lit green, showing you whether the (left) “A” or (right) “B” receiver is currently being used. The UR1 constantly scans its two antennas and automatically selects whichever is receiving the strongest, clearest signal. This *True Diversity* switching is completely inaudible, but it effectively increases overall range while virtually eliminating potential interference and phase cancellation problems.

**5: RF (Radio Frequency) Level meter** - This five-segment meter (similar to the VU bar meter used on audio devices) indicates the strength of the UHF signal being received. When all segments are lit, the incoming RF signal is at optimum strength; when only the left-most segment is lit, the incoming RF signal is at minimum strength. If no segments are lit, no signal is being received; check to ensure that the transmitter is on and that it is set to the same channel as the UR1. See the “Setting Up and Using the AirLine System” section on page 15 in this manual for more information.

**6: Power LED** - This lights red whenever the UR1 is turned on.

**7: Mute (squelch) control** - This control determines the maximum range of the UR1 before audio signal dropout. Although it can be adjusted using the supplied plastic screwdriver, it should normally be left at its factory setting. See the “Setting Up and Using the AirLine System” section on page 15 in this manual for more information.

**8: Power switch** - Use this to turn the UR1 power on and off. When the receiver is on, the Power LED (see #6 above) is lit.

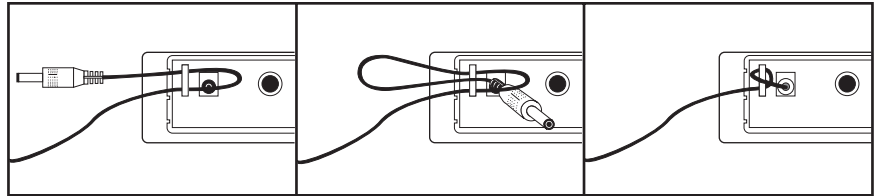
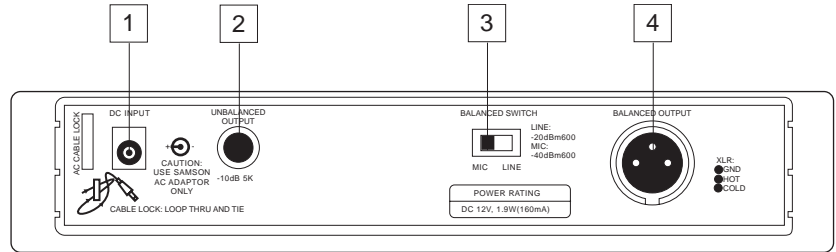
**1: DC input** - Connect the supplied 12 volt 160 mA power adapter here, using the strain relief as shown in the illustration below. **WARNING:** Do not substitute any other kind of power adapter; doing so can cause severe damage to the UR1 and will void your warranty.

**2: Unbalanced output\*** - Use this unbalanced high impedance (5K Ohm) 1/4" jack when connecting the UR1 to consumer (-10) audio equipment. Wiring is as follows: tip hot, sleeve ground.

**3: Audio Output Level switch** - Sets the audio output level attenuation of the balanced output (see #4 below) to -20 dBm (line level) or -40 dBm (mic level). See "Setting Up and Using the AirLine System" on page 15.

**4: Balanced output\*** - Use this electronically balanced low impedance (600 Ohm) XLR jack when connecting the UR1 to professional (+4) audio equipment. Pin wiring is as follows: Pin 1 ground, Pin 2 high (hot), and Pin 3 low (cold).

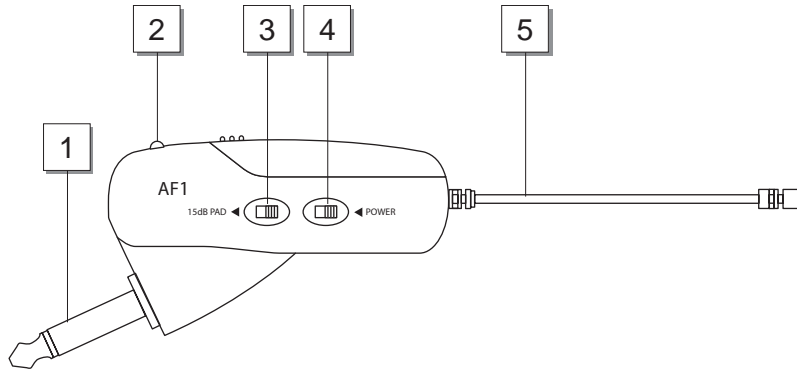
\* If required, both the unbalanced and balanced outputs can be used simultaneously.



# Guided Tour - AF1 / AG1 Transmitters

Samson AirLine

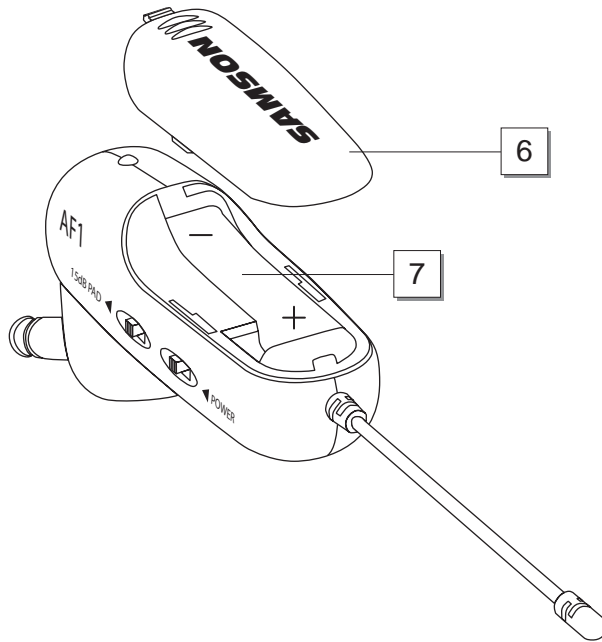
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*Note: The AF1 and AG1 transmitters are functionally identical apart from the angling of the 1/4" plug. For purposes of illustration, only the AF1 is shown on these pages.*

**1: Plug** - Insert this standard 1/4" plug into your electric guitar or electric bass. Note that the angling of the plug is different in the AF1 (which is designed to be used with instruments that have Fender Stratocaster™-type recessed jacks) than in the AG1 (which is designed to be used with all other instruments that have end mount-jacks).

**2: Power / Battery LED** - This LED flashes once when the AF1 or AG1 is first turned on and lights steadily red when there are less than 2 hours of battery power remaining, indicating that the battery needs to be changed. In order to avoid compromising audio fidelity (or having the AF1 / AG1 stop working completely), you should always replace the battery with a fresh one immediately whenever this LED lights red.



**3: 15 dB Pad** - Move this switch in the direction of the arrow to reduce the output of the AF1 or AG1 by 15 dB when your instrument is putting out too hot a signal. See the “Setting Up and Using the AirLine System” section on page 15 in this manual.

**4: Power switch** - Move this switch in the direction of the arrow to turn power to the AF1 or AG1 on; move it away from the arrow to turn power off.

**5: Antenna** - This permanently attached flexible antenna should be fully extended during normal operations. See the “Setting Up and Using the AirLine System” section on page 15 in this manual for more information about antenna positioning.

**6: Battery cover** - Pull back gently on this cover at the ribbing and pry upwards to remove. See the “Setting Up and Using the AirLine System” section on page 15 in this manual.

**7: Battery compartment** - Insert a standard AAA alkaline battery here, being sure to observe the plus and minus polarity markings shown. We recommend the Duracell type battery. Although rechargeable Ni-Cad batteries can be used, they do not supply adequate current for more than four hours. **WARNING:** Do not insert the battery backwards; doing so can cause severe damage to the AF1 / AG1 and will void your warranty.

# Setting Up and Using Your AirLine System *Samson AirLine*

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The basic procedure for setting up and using your AirLine System takes only a few minutes:

1. For your AirLine system to work correctly, both the receiver and transmitter must be set to the same channel. Remove all packing materials (save them in case of need for future service) and check to make sure that the supplied AP1 receiver and AF1 or AG1 transmitter are set to the same channel (a complete channel plan is printed on page 71 in this manual). If these channels do not match, contact your distributor or, if purchased in the United States, Samson Technical Support at 1-800-372-6766.
2. Physically place the AP1 receiver on the ground in front of you. It works best in this position. The general rule of thumb is to maintain “line of sight” between the receiver and transmitter so that the person using the transmitter can see the receiver.
3. Extend the AP1 antennas and spread the tips horizontally outwards approximately 5 inches.
4. Make sure the Power On-Off switch in your AF1 or AG1 transmitter is set to “Off” and that the 15 dB pad is also Off (switch away from the direction of the arrow). Pull back gently on the AF1 or AG1 battery cover at the ribbing and pry it upwards to remove it. Please use care when opening this cover as undue force can damage it. Install a fresh AAA alkaline battery in the battery compartment, being sure to observe the polarity markings. Then carefully replace the battery cover and gently press down on it until it clicks. Momentarily turn on the power to the transmitter by sliding its Power on-off switch in the direction of the arrow; the “Power/Battery” LED will flash if the battery is sufficiently strong (if it lights steadily, the battery has less than 2 hours of power remaining and should be replaced). Once battery strength is verified, turn the transmitter off again and plug it into your electric guitar or bass.
5. With the Power switch on the AP1 set to the “Off” position (away from the arrow), gently press down on the AP1 battery compartment latch and swing the battery compartment door open (do not use force when opening or closing the battery door; it is hinged and not meant to be removed). Install a fresh 9-volt battery, then carefully close the battery door. Alternatively, you can connect a 12-volt AC adapter (available as an option from your Samson dealer). Turn the AP1 on momentarily to confirm that the

# Samson AirLine **Setting Up and Using Your AirLine System**

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battery has been installed correctly (or that the adapter has been connected correctly); the “On/Battery Low” LED should light green and not red. Then turn the AP1 power off.

6. Make the physical cable connection between the AP1 output jack and an audio input of your amplifier or mixer. Leave your amplifier or mixer off at this time.

7. Turn the Level knob on the AP1 completely counterclockwise, then slide its Power switch in the direction of the arrow to turn it on. The “Power On” LED will light steadily green.

8. Turn on the power to the transmitter. The “TX / Peak” LED on the AP1 receiver should now light steadily green, indicating that it is receiving valid RF signal and is placed and positioned correctly.

9. Now it's time to set the audio levels. Turn on your amplifier and/or mixer but keep its volume all the way down. Set the output level of your electric guitar or bass to maximum and begin playing it at a normal performance level while observing the AP1 “TX/Peak” LED. If the LED lights red (indicating a Peak condition) even with the AP1 Level control fully counterclockwise, engage the 15 dB pad on your transmitter by sliding the switch in the direction of the arrow. If not, slowly turn the AP1 Level control clockwise to the point where the “TX/Peak” LED occasionally blinks red during the very loudest passages, then back it off just slightly; this will ensure maximum signal to noise ratio. Finally, raise the level of your amplifier and/or mixer until the desired volume is reached.

10. If you hear distortion or the AP1 “TX/Peak” LED lights red even with the 15 dB pad engaged and the Level control at minimum (fully counterclockwise), reduce the output level of your instrument until the LED no longer lights red. Conversely, if you hear a weak, noisy signal at the desired volume level, make sure that your instrument is set to maximum output level, that the 15 dB pad is not engaged, and that the AP1 Level control is turned up. When using instruments with active or high level pickups, the Level control should normally be set in the marked region.

# Setting Up and Using Your AirLine System *Samson AirLine*

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11. Temporarily turn down the level of your amplifier or mixer and turn off the power to your transmitter, leaving the AP1 receiver on. Then restore the previously set level of your amplifier or mixer. With the transmitter off, the receiver output should be totally silent; if it is, skip ahead to the next step. If it isn't (that is, if you hear some noise), you may need to adjust the AP1 Squelch control. When the Squelch control is at its minimum setting, the AirLine system always provides maximum range without dropout; however, depending upon the particular environment your system is used in, you may need to reduce that range somewhat in order to eliminate band noise when the AF1 or AG1 transmitter is turned off. To do so, use the provided screwdriver to rotate the Squelch control completely counterclockwise (to the "Min" position), then slowly turn it clockwise until the noise disappears. If no noise is present at any position, leave it at its fully counterclockwise "Min" position (so as to have the greatest overall range available).

12. When first setting up your AirLine System in a new environment, it's always a good idea to do a walkaround in order to make sure that coverage is provided for your entire performance area. Accordingly, turn down the level of your audio system and turn on both the transmitter and receiver. Then restore the level of your audio system and while playing your electric guitar or bass at a normal performance level, walk through the entire area that will need to be covered. As you do so, observe the "TX/Peak" LED on the AP1 receiver to make sure that it is steadily lit green, indicating that it is receiving sufficiently strong RF signal. Always try to minimize the distance between transmitter and receiver as much as possible so that the strongest possible signal is received from all planned transmission points. In certain environments, it may be desirable to angle the AP1's antennas differently from the vertical position.

If you have followed all the steps above and are experiencing difficulties, contact your local distributor or, if purchased in the United States, call Samson Technical Support (1-800-372-6766) between 9 AM and 5 PM EST.

# Specifications

*Samson AirLine*

## **Transmitter (AF1 / AG1)**

RF Output Power (5mW)	-4dB Minimum, +3dB Maximum
Frequency Stability	-40kHz Minimum, 40kHz Maximum
Spurious	1 $\mu$ W
Modulation Factor	13kHz Minimum, 15kHz Typical, 17kHz Maximum, Input 1kHz-10dBv
Pre-emphasis	50 $\mu$ sec
Maximum Input Level	+2 dBv
Input Impedance	2K ohms
THD	< 2% (1 kHz deviation 15kHz)
Audio Frequency Response	50Hz - 15kHz ( $\pm$ 3.5 dB)
Operating Power Voltage	1.5V Typical, 1.05V Minimum, 2V Maximum
Current Consumption	60mA Typical
Battery Life	14 Hours (AAA size battery)
Output	6.3mm / 1/4 in. mono Jack
Antenna	Permanently attached 1/4 wave length wire
Controls	Power Switch, 15 dB Pad Switch
Indicators	Power On (LED Flash), Low Battery (LED On when battery less than 1.1V)

## **Receiver (AP1)**

Receiving Frequencies	USA 801–805MHz (U1-U6), Europe 863–865 (E1-E4), One frequency in Channel Plan
Frequency Type	F3E
Modulation Type	Variable Reactance Modulation
Type of Reception	Single superheterodyne
OSC (Oscillator) System	Crystal controlled OSC (oscillator)
Local Oscillator Frequency	79MHz Range



# Specifications

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Intermediate Frequency	10.7 MHz
Operating Distance	100m (328 ft) receiver in sight
Noise Reduction	Compander type
Deemphasis	50µsec
Output Connector	6.3mm / 1/4 in diameter phone jack (unbalanced)
Power Input Jack	5.5mm/.21in diameter
Operating Temperature	0°C – +50°C
Storage Temperature	-20°C – +70°C
Receiving Sensitivity	More than S/N60 dB (less than 2%) at 21 dBuv input
Squelch Sensitivity	17dBuv ±4dBuv
S/N Ratio	More than 95dB (IHF-A)
(when comparing to S=0dBv)	More than 90dB (IHF-A)
Audio Output Level at div. f15 kHz	Unbalanced output 0dBv
Maximum Output Level	Audio OUT +8dBv ±3dB at 3% distortion div. f36kHz
Audio Frequency Response	50Hz – 15kHz (at -30dBv ±4dB output)
THD (at SG output 56 dBuv)	less than 1% (at div. f20kHz AF 1 kHz)
Output Impedance	Unbalanced output 5K – 10K ohms, Balanced output 600K – 2.5K ohms
Power	AC adapter (12DVC/more than 200mA) or 9 V battery
Current Consumption	Less than 70mA Max
Peak LED Lighting div. frequency	Div. f23kHz ±3kHz (at AF output approx. +7dBv)
Antenna	Dual 1/4 wave length rod antennas
Controls	Audio level volume (front)
	Squelch level volume (rear)
Display	2-color LED x 2
	Power On (Green) / Batt (Red) + TX (Green) / Peak (Red)