Tips and Best Practices for Using AKG DMS100 and DMS300 Digital Wireless Systems

Congratulations on your purchase of the AKG DMS100/300 digital wireless system. We know that you are anxious to get up and running. The quick user guide included with your DMS system provides you with the basics needed to set up and operate your wireless system right out of the box.

The information contained in this document will a) provide more details regarding key features and specific functions, b) offer helpful hints for getting the best results in the field, and c) will provide answers to frequently asked questions. Let's get started!

DMS100
Two Variants:
• Receiver and Transmitter
• Receiver and Microphone

DMS300
Two Variants:
• Receiver and Transmitter
• Receiver and Microphone

DMS100/DMS300 OVERVIEW

DMS100/DMS300 digital wireless systems are available in four configurations as shown above; also referred to as Vocal Sets (handheld transmitter with receiver) and Instrument Sets (bodypack transmitter with receiver).

DMS100/DMS300 systems are designed for use in small/mid-size venues. Applications include:
• Live Sound – for vocal and instrumental musicians
• Presentations – for educational/vocational presenters, instructors and trainers
• Meeting Spaces – for small/mid-size corporate/business users in need of private, secure wireless communications

DMS100 and DMS300 digital wireless systems are similar in many ways including:
• Easy setup and operation - designed from the ground up to be intuitive with seamless setup, easy channel pairing and adaptive channel selection that takes the guesswork out of locating available wireless channels.
• Global license free operation – as the available spectrum assigned for use by wireless microphone systems continues to shrink worldwide, DMS100/DMS300 digital wireless systems are a convenient alternative in that they are able to operate in the 2.4GHz, global license-free wireless space.
• Authentic AKG microphone capsule – The DMS Vocal Sets feature AKG acoustics engineering-designed mic capsules.
• High-resolution 24-bit/48kHz audio quality – pristine vocals and studio quality sound with none of the interference commonly found when using some analog wireless systems.
• Pro outputs - XLR balance output (0dB line level, -30dB mic level switchable) and ¼" unbalanced line output.
• Advanced AES 256-bit encryption – maintains confidential communications in small-to-medium size meeting spaces.
• 100-foot operating range line. * See section pertaining to single and multiple, simultaneous, co-existing systems use.
• Long battery life - 12-hours handheld or bodypack battery life using 2 x AA alkaline batteries.
• Integration with Soundcraft Ui24R mixing consoles (see details below).

- Universal AC/DC power adapter – incorporates cable routing/strain relief on receiver
- DMS100 uses color coded LEDs (green, blue, yellow or purple) for easy channel assignment and identification. Up to four simultaneous, co-existing DMS100 systems can be used at the same time. The number of systems and operating range may vary based on the complexity/density of the wireless environment where the system is used.

- Bodypack transmitters include an instrument cable that can be used for a wide range of instruments (electric guitars, electric bass, remote keyboards and acoustic instruments that incorporate pickups that have ¼ jack outputs such as acoustic guitar, violin, etc.).
- The bodypack transmitters accept a number of optional 3pin FE mini-XLR AKG headsets or clip-on mics, see
  - https://www.akg.com/Headset%20Microphones
  - https://www.akg.com/Speech%20%2F%20Spoken%20Word%20Microphones
  - AKG 3pin mini FE XLR mic models tested and confirmed include C111LP, CK77WRLP, CK99L, LC81MD, CM311L, C520L, C555L, C518ML and C519ML. One model NOT recommended is C417L.
- Both DMS100 and DMS300 receivers work with the optional AKG RMU40 Pro rackmount kit, see
  - https://www.akg.com/Wireless/Wireless%20Accessories/RMU40pro.html?dwvar_RMU40pro_color=Black-GLOBAL-Current#q=rmu40+pro&start=1

The DMS300 offers everything in the DMS100 above plus:
- Seamless setup and operation – supports up to eight simultaneous, co-existing DMS300 systems in use at the same time. The number of systems and operating range may vary based on the complexity/density of the wireless environment where the system is deployed.
- Vivid, high-resolution graphic front-panel LCD screen – easy setup with channel ID number, volume level in dB and bar-style battery indicator displayed.
- Remaining battery level indicator – battery bar indicator on transmitter and receiver displays
- RJ12 jack for sync – coordinates/synchronizes all DMS300 system operation (one foot RJ12 6P6C straight-through cable is included). It supports longer sync cables up to an 18" maximum length RJ12 6P6C straight-through cable. ** See section on multi-system operation using RJ12 cable synchronization.
- Two removable front-mounted antennas
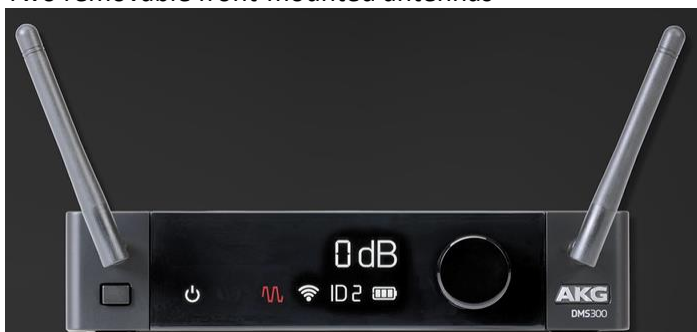
MULTIPLE, SIMULTANEOUS, CO-EXISTING DMS100/DMS300 DIGITAL WIRELESS SYSTEM OPERATION

The basic instructions for multiple DMS100/DM300 systems operation are included in the user guide. Here are some additional points that will help you understand the setup and operation:

- With DMS100, you can support up to a maximum of four simultaneous, co-existing DMS100 systems being used at the same time while DMS300 can support up to a maximum of eight simultaneous, co-existing DMS300 systems being used at the same.
- Additionally, a DMS300 is superior to DMS100 in situations when you plan to operate multiple simultaneous, co-existing wireless mic/instrument systems at the same time. DMS300 systems will operate in a coordinated manner that provides frequency management, audio performance and system operation among all systems as long as they are synched using the included RJ12 cable connections as shown below.
- Actual operating range and performance may vary based on the wireless environment, congestion, conditions as well as other factors related to line of site operation.
- We do not recommended using DMS100 systems at the same time with DMS300 systems or mixing DMS systems with wireless systems from other manufacturers. Doing so may cause a more unstable wireless environment since different systems would be operating in a non-synchronized manner.
- Here is a suggested connecting diagram for synchronizing up to a maximum of eight DMS300 systems using seven RJ12 6P6C straight-through wired cables (one RJ12 cable included with each DMS300 system). Supports up to an 18" maximum length RJ12 6P6C straight-through cable.

7 PCS. RJ12 CABLES FOR SYNCING 8 DMS300 VOCAL/INSTRUMENT SETS
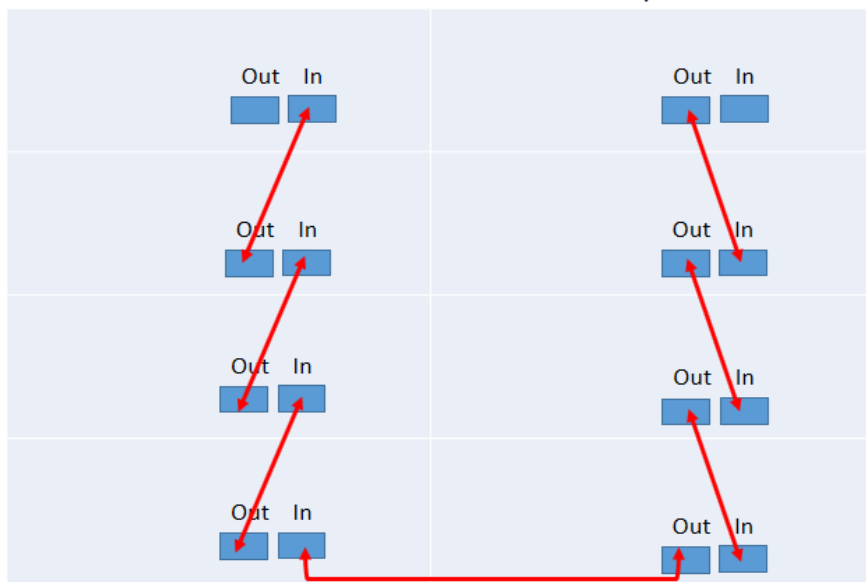
Please note the following when establishing synchronization between multiple DMS300 systems:
- Each DMS300 system first must be paired to a unique channel ID number (1-8). You only need to use seven RJ12 6P6C cables to link up to eight systems. If you plan to use seven systems, then you would only need six RJ12 cables, etc. Anytime you plan to use more than one DMS300 at the same time in a small venue location, you must pair each system separately and then sync them using the appropriate 6P6C RJ12 cable(s).
- It does not matter what order DMS300 systems are connected to each other. The diagram above shows one possible way to connect them. This diagram provides you with the shortest path for cable routing when units are arranged side-by-side and stacked in this manner.
- It does not matter if you power all DMS300 systems ON and then pair each receiver individually to a transmitter or if you power each unit ON individually and then pair each receiver individually to a transmitter.

DMS100-300 INTEGRATION WITH SOUNDCRAFT UI24R DIGITAL MIXER/USB MULTI-TRACK RECORDER
(to be included in an upcoming Ui24 firmware release)

DMS100/300 is designed to send Harman CPA IOSYS messages to Soundcraft Ui24R mixers. This feature provides a quick, easy way to see which wireless microphone/instrument system is plugged into which Soundcraft Ui24R mixer input channel as follows:

- DMS100 workflow allows you to see: 1) the channel pairing LED color on the wireless transmitter (inside the battery cover), 2) the channel pairing LED color on the wireless receiver front panel, and 3) the DMS100 device name and channel ID color as text at the bottom of Soundcraft Ui24R HTML5 screen input mix channel display.
- DMS300 workflow allows you to see: 1) the channel ID number on the wireless transmitter (inside the battery cover), 2) the channel ID number on the wireless receiver front panel, and 3) the DMS300 device name and channel ID number as text at the bottom of Soundcraft Ui24R HTML5 screen input mix channel display.

Connections and Setup

Preferred: Connect the DMS100/300 XLR line level output (switch set to "0dB" level on the back of the receiver) to the Ui24R mixer input since it ensures a balanced audio signal throughout the audio chain. When connected in this manner, the Ui24R input channel will receive the IOSYS message when the input channel is set to unity gain.

Alternate: Connect the DMS100/300 unbalanced ¼" line level output (base station switch set to "0dB" level on the back of the receiver) to a Ui24R input channel. The Ui24R input channel must be set at a minimum +30dB input gain for it to receive the IOSYS message via the DMS ¼" line level signal.

To Send DMS System Type and Pairing Channel Information to Ui24R

When a paired DMS100/300 system audio output is connected to a Soundcraft Ui24R mixer input channel and the DMS device is unmuted, a Harman CPA IOSYS message appears at the bottom of the Ui24R input channel strip. The message describes the type of DMS system and its pairing channel color or ID. (The DMS100 shows a pairing channel ID color on both the DMS device and the wireless base station. The DMS300 show a channel ID number displayed on both the DMS300 transmitter and receiver).

Once connected, here is a summary of the information displayed in the Soundcraft Ui24R mix window:

DMS100 – Ui24R IOSYS Messages

- "DHT100" = DMS100 handheld transmitter or "DPT100" = DMS100 pocket/bodypack transmitter
- Channel ID colors "G" = green, "B" = blue, "Y" = yellow and "P" = purple
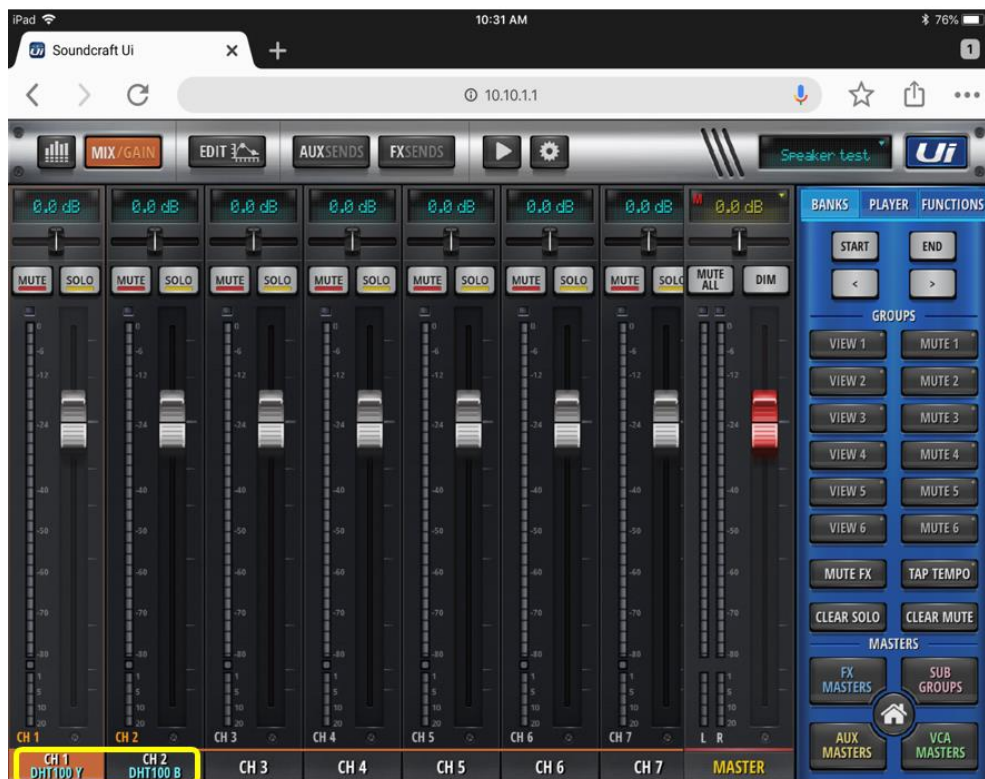
DMS300 – Ui24R IOSYS Messages

- "DHT300" = DMS300 handheld transmitter or "DPT300" = DMS300 pocket/bodypack transmitter
- The channel ID numbers are "1", "2" up to ……"8"
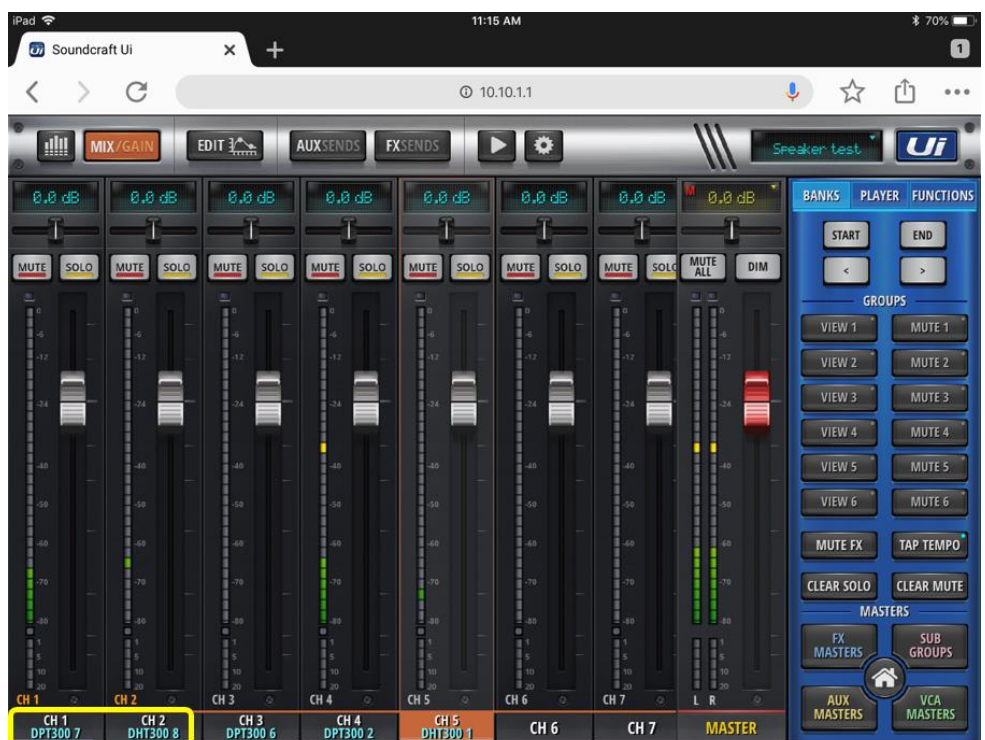
In the Ui24R *SETTINGS / LOCAL* page, the default settings for *CPA, Hide CPA Serial Number and Hide CPA Message* are "ON". These settings can be changed as follows if desired:

- If you change "CPA" to OFF, then no IOSYS channel messages will be displayed.
- If you change "Hide CPA Serial Number", then the product serial number will be displayed in between the model number and channel ID number at the bottom of the input channel strip.
- If you change "Hide CPA Warning Message", then an "IOSYS" message will flash very briefly across the mixing window and then disappear.
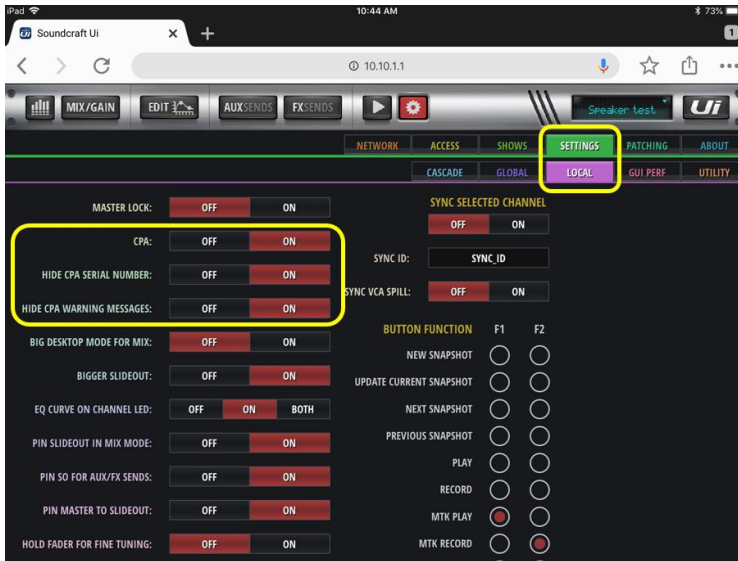
For more information regarding Soundcraft Ui24 integration with DMS100-300 digital wireless microphone and instrument systems, refer to the user guide: https://www.soundcraft.com/en-US/products/ui24r#downloads_and_docs

TIPS AND BEST PRACTICES FOR DIGITAL WIRELESS MIC/INSTRUMENT SYSTEM OPERATION

Here are some tips, tricks and best practices to keep in mind that will enable you to get the most reliable, real-world performance from your DMS100/DMS300 wireless systems:

- Ideally, you should always maintain line-of-sight between the transmitter and receiver within the operating range of the system whenever possible. In actual use in various wireless environments and conditions, actual operating range may be higher (actually much higher) or lower.
- The human body itself acts as a shield that blocks wireless energy transmission. So it is important to make sure that bodypack transmitters are not covered or blocked (again, think line of sight).
- The DMS300 does not support the use of remote antenna cables.
- There a number of potential barriers that may prevent you from getting the best wireless operation/results in real world settings including solid walls, metal objects, crowds of people and other wireless devices/systems in a given environment.
    - o Do not place DMS100/DMS300 receivers next to large, reflective metal objects or walls that can absorb wireless systems and prevent signals from being received. If you plan to rackmount your wireless receivers, use wood racks rather than solid metal racks that can adversely affect wireless performance.
    - o Metal jewelry may also limit operating range or performance as it can act as an antenna and disrupt the transmission of the wireless device. The larger the piece of metal is or the closer it is to the transmitter, the more likely this issue may occur.
    - o Wireless environments range from being open, clear spaces to very dense with lots of wireless activity all around. While not always possible, try to keep radio/radiation sources as far away from the receiver as possible. This includes any number of wireless sources/devices that operate on WLAN or Bluetooth. Always be consciously aware of your wireless surroundings in order to mitigate possible issues in advance.
    - o As mentioned earlier, a group of people placed in between the transmitter and receiver can block wireless signals. So consider evaluating the placement of the receiver and keep antennas are as close to the transmitters as possible while maintaining line of sight.
- After removing the battery cover from the bodypack transmitter, you will see an input sensitivity/trim pot that enables you to adjust the input signal depending on the instrument or microphone connected to it. Use the tab on the battery cover/door as a flat-head screwdriver to adjust the trim pot position up or down and then monitor the audio level. While playing (or singing) at your typical level, set the trim pot to an optimum position where you hear the maximum audio level output before the audio level overloads/clips or it sounds distorted.
- AA alkaline batteries are the recommended type for use with DMS systems. Check the battery level indicators on the transmitter prior to each use to assure that you will have sufficient power need to make it through the event/meeting/performance. You can also monitor battery levels from the receiver side as well. Weak batteries can lower signal strength and operating range. So make sure to keep quality AA alkaline batteries on hand at all times.

See www.akg.com for all DMS100-300 digital wireless system information including specifications, user guide, spec sheets, video and more. Here are the links to the AKG DMS100/DMS300 webpages:

DMS100 Vocal Set:
https://www.akg.com/Wireless/wireless-components/DMS100+Microphone+Set.html?DMS100%20Microphone%20Set_color=Black-GLOBAL-Current

DMS100 Instrument Set:
https://www.akg.com/Wireless/wireless-components/DMS100+Instrument+Set.html?DMS100%20Instrument%20Set_color=Black-GLOBAL-Current

DMS300 Vocal Set:
https://www.akg.com/Wireless/wireless-components/DMS300+Microphone+Set.html?dwvar_DMS300%20Microphone%20Set_color=Black-GLOBAL-Current#q=dms300&start=1

DMS300 Instrument Set:
https://www.akg.com/Wireless/wireless-components/DMS300+Instrument+Set.html?dwvar_DMS300%20Instrument%20Set_color=Black-GLOBAL-Current#q=dms300&start=1