ABonAir
Live Excitement. Wirelessly!




# AB4000

## Professional 4K/UHD wireless video link


### Product Highlights

The AB4000™ is a professional wireless video system for Sport, News, Studio production, Cinema, live events etc. It is a broadcast-quality system with extremely high picture quality and a robust link based on the ABonAir unique Bi-Directional® link empowered by its ReTransmit® algorithm, which was designed to overcome wireless interference by acknowledging each and every pixel sent over the air and verifying its content before decoding using the wireless optimized H.265 CODEC.

The Transmitter also provides a loop-through connection for easy connection to the cameraman's monitor

The AB4000 has many features that have been developed over 12 years of experience serving Tier-1 customers in the professional market.

### Key Features

- 4K/UHD — Up to 4096x2160 (60/50/24)
- HDR (High Dynamic Range) — HDR10+, HDR10, HLG, Dolby Vision
- Intercom
- Loop through
- 1-to-Many
- Many-to-1
- Transmitter / Receiver mode - each device can function as either a Transmitter or a Receiver
- CCU / RCP (Sony, Panasonic, Blackmagic etc.)
- PTZ Remote Control
- Tally Light
- Metadata
- 1000 ft / 300m distance

## Use Cases

The AB4000 is perfect for sports (closed arenas as well as small/medium open arenas), studios (such as reality show productions), news (OB trucks, DSNG, and DENG vans), live events (stadium concerts and street events) as well as religion (house of worship live broadcasts).

### Sports — Basketball, Baseball, and Football

Many sports events, such as basketball, ice hockey, bike races, etc., take place in closed or open-air arenas or stadiums. Thousands of excited people gather to support their teams, shouting, filming the event on their smartphones, and sending the videos to others who could not attend.

For those who are home, watching the live event on their screens, every second counts. They expect to see high-resolution, broadcast-quality footage from every angle.

The AB4000 is the perfect solution for small- and medium-size sports arenas. It is easy to deploy and use, providing broadcast-quality footage at affordable prices, with a high-quality picture and stable signal that can go to air or a big screen without pixelization or breaking out. It supports CCU control to enable a multi-camera production, as well as an intercom to allow for director/camera operator communication, providing perfect event coverage from any angle.

### Studio

In modern studio productions, a wireless system is a must! Producing from multiple angles and locations is a challenge for any camera operator. To make it exciting, bringing "news" from behind the scenes, and accompanying the anchor and artists all the way to the stage, the cameras must be wireless, and the camera operator must move quickly from one place to another—all while maintaining the footage at broadcast quality.

The camera operator's communication with the director is important for the coordination of coverage from every corner in real time. Tally light support enables the use of a wireless camera as part of bigger production with other wire cameras.

One of the biggest challenges for in-studio production is the amount of equipment that the camera operator must carry in addition to the camera. The AB4000 is the perfect solution for in-studio productions because it combines wireless broadcast-quality video, CCU, embedded intercom, and more, all in one small and lightweight

(12 oz/350 grams) box!

### News

Today, news erupts nonstop around the globe. Broadcasters and news agencies are in a constant race to cover these events and are eagerly looking for the most authentic pictures and video coverage as news evolves. Audiences are extremely interested in seeing the first live footage, which today can arrive from any smartphone. However, it is difficult to deliver live, authentic video coverage from these locations in broadcast quality.

With the AB4000, everyone can broadcast news from anywhere, thus creating authentic footage. The AB4000 system consists of two small and lightweight units that can be easily deployed anywhere, start transmissions in no time, and bring live news as it happens.

### Cinema Production

The AB4000 is the ultimate product for every movie director. Not only can it be used as a monitor to the camera but it can also record the content of the last take and share the last scene with multiple receivers (e.g., the assisting director, light team, and producer). Moreover, during the production, the director can talk with the camera operator via a built-in intercom. All these features and abilities are set in a single box.

### Reality Show Production

In a reality show, sometimes multiple cameras take shots from every angle or at a distance from each other. The director must monitor all of them simultaneously and orchestrate the production. Specifically, for this type of production, we developed a unique feature called Many-2-1 (many to one).

This allows the director to monitor a complex multicamera event. In parallel, the intercom connection enables smooth communication between the director and camera operators. It is a great tool for any director, allowing directors to instruct the camera operator at any moment. Excellent examples of this use case are reality shows such as Survivor and MasterChef.




## Features

### 4K/UHD Support

The AB4000 supports full 4K resolution up to 4096x2160 via both a 12G SDI connector and an HDMI 2.0 connector and support all resolution and frame rates. This exceptionally high-quality video support is achieved by the specially developed wireless optimized H.265 compression CODEC and abounded of distinctive algorithms.

### 1-2-Many

With this feature, each transmitter can transmit video to an unlimited number of receivers. This enables unlimited monitors to be connected to a single transmitter.

**In a Cinema Production:** The camera transmitter transmits to five receivers (e.g., director, director's assistant, light operators, wardrobe, etc.) so that everyone is in sync with the production progress. The director can also use the "instant replay" and transmit the replay of the last take to all of them while talking over the intercom, providing feedback, and giving instructions for the next take.

**During a Religious Service:** One transmitter can transmit to multiple monitors spread around the hall and show this service from any angle.

### Many-2-1

In this topology, each receiver can be paired to many transmitters and simultaneously receive different video streams that can be combined into a single mosaic picture. A good example of a use case is reality show productions such as Survivor, in which the cameras are spread throughout the area and the director can view all of them at the same time and direct the camera operators via the integrated intercom. Viewing content from multiple cameras at once is also important for small events like weddings, where the receiver replaces the switcher, saving the cost of additional equipment and streaming a selected video to screens and monitors.

### CCU (Camera Control Unit)

The CCU enables the balance of multiple camera parameters remotely from the control center or OB van/track to adjust ALL camera parameters like white balance, color temperature, master gain, black level trim, etc. This is a necessary feature for any multi-camera production. ABonAir systems support the CCU signals of Sony, Black Magic, Panasonic, Ikegami, Hitachi, Grass Valley, and others. The system also supports a single CCU supporting multiple cameras via switcher.

### Intercom

The AB4000 has an embedded intercom (including IFB) that utilizes the same RF channel for communication between the camera and producer/director. This enables communication between the camera operator and director on set without the need for additional equipment, antennas, or a complex setup.

### 4 Video Port (12G SDI, HDMI) Switch/Converter/Scaler

Each AB4000 has two bi-directional input/output connectors and two additional outputs:

- 12G SDI Input/Output Bi-Directional Connector
- 12G SDI Output Connector
- HDMI 2.0 Input/Output Connector
- HDMI 2.0 Output Connector

This variety allows for maximum flexibility in connecting the product to any camera in either SDI or HDMI and to any on-camera-monitor as loop-through SDI or HDMI. On the receiver side, connect it to four different devices (e.g., monitors, web streamers, matrices, big screen, etc.) with two SDI outputs and two HDMI outputs, each with the different or same resolution.

The AB4000 can be used as a switch box, format converter, and scaler at the same time, as any input can be converted to any output in a different resolution (i.e., 4K can be downscaled to HD in any format required).

For example, the input from the camera can be 4K in SDI. This signal can be looped through to a small, low-cost HD HDMI monitor on the camera while, at the same time, being transmitted wirelessly to the receiver where all four outputs are available to use (i.e., two HDMI and two SDI). Any output can be in different resolutions.

### Mounting

The AB4000 professional wireless system is equipped with 2 mounting options: Hot Shoe for small cameras, Gold Mount or V-Lock battery mounts for bigger cameras with battery plates. Power from the battery is transferred directly to the camera and in parallel to the Transmitter. This allows maximum flexibility without any additional power cable or D-Tap. With these options, the AB4000 can be easily mounted on any camera.

### Transmitter/Receiver in One Unit — Full Flexibility

The AB4000 is a unique system that incorporates a transmitter and receiver housed in one chassis! To change the mode of functionality, simply push a button.

Each of the AB4000 units (two per kit) can work as either a transmitter or a receiver, so if a production house bought three kits (six units), they can work as three separate links on one day, and as one to five the next day. The options are unlimited. This flexibility in using the unit in either mode saves up to 30% on inventory cost in a rental house, allowing for maximum freedom. In addition, if one unit is broken or in need of repair, many options are still available.

## High-Performance System

### Very High Picture Quality and Extreme Robust Signal

Based on our long experience with professional wireless video link systems, we realize that **Performances** are the key factor that makes a system a great one. **High picture quality** and a **robust signal** that does not break during the session are the two most significant factors that enable great performance. This is crucial to all production teams.

ABonAir recognized this and subsequently invested time and resources into perfecting these two key factors. We developed multiple algorithms and technologies to ensure high picture quality and unmatched signal stability.

Some of the technologies invented and developed by ABonAir include:

- **Bi-Directional Radio —** ABonAir's systems are based on bi-directional radio communication between the transmitter and receiver and multi-directional communication when in use in 1-to-many and many-to-1 modes. This unique radio capability enables the receiver to verify and acknowledge each and every pixel received and ensure that it has been received correctly. If this is not the case, a re-transmit operation will start automatically by an algorithm, and that pixel will be transmitted again to ensure a 100% accurate picture.
- **Unique Wireless Optimized H.265 CODEC —** To achieve maximum video quality with extreme stability, ABonAir's products rely on a dynamic compression algorithm that utilizes ABonAir's H.265 unique CODEC technology. This CODEC was developed specifically for a wireless system with optimization for such a use case, including minimum Sub-Frame delay. The system constantly monitors wireless channel performance and changes the CODEC parameters to achieve optimal picture at specific conditions. These adjustments are done 10 times each second, thus always assuring the best performance.
- **MIMO (Multiple Input Multiple Output) —** To overcome wireless link fading, noisy RF environments, and interference from multiple sources, the ABonAir system utilizes an antenna array that allows for sending and receiving more than one data signal simultaneously over the same radio channel. This ensures strong signal reception and multipath resistance.
- **Use of Unlicensed Frequency —** To simplify production and enable every production to use ABonAir's advanced system, ABonAir's systems work in unlicensed frequencies that do not require licenses to operate worldwide. This enables maximum flexibility when producing in other countries' locations. However, working in unlicensed frequency comes with a price, such as many interferers. To overcome that, we have developed multiple algorithms such as interference avoidance, re-transmit, frequency hopping, cannel prediction, etc.
- **Control Information —** The ABonAir system transmits control information in parallel to the video data to monitor the link performance and predict changing conditions and link degradation, in and out of white noise, clear channels, etc. All this data is used by an AI algorithm to calibrate the system to the optimal working point that will robustly deliver the best possible video.
- **Stability and Robustness Algorithms —** ABonAir's algorithms automatically change rates, correct errors on the go, find the best transmission frequency, monitor BER and optimize performance during operation to ensure robust high quality video.

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