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Studio Broadcast System

RP32 Receiver Module

SET UP and USE

1. REGULATORY AND COMPLIANCE

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This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

This device complies with INDUSTRY CANADA R.S.S. 210, en conformité avec IC: RSS-210/CNR210.

Operation is subject to the following conditions: 1) This device may not cause harmful interference and 2) this device must accept any interference received, including interference which may cause undesired operation. Changes or modifications not expressly approved by Audio-Technica could void your authority to operate this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is unlikely to cause harmful interference. However, if the equipment does cause harmful interference, the user will be required to correct the interference at own expense.

CAUTION! Electrical shock can result from removal of SpectraPulse™ components' covers. Refer servicing to qualified service personnel. No user-serviceable parts inside. Do not expose to rain or moisture.

The circuits inside the SpectraPulse™ components have been precisely adjusted for optimum performance and compliance with federal regulations. Do not attempt to open the drm141 Digital Receiver Module (main assembly), aci707 Audio Control Interface, mtu101 Boundary Microphone Transmitter or cei007 Charger Encryption Interface. To do so will void the warranty, and may cause improper operation.

Notice to individuals with implanted cardiac pacemakers or AICD devices:
Any source of RF (radio frequency) energy may interfere with normal functioning of the implanted device. All wireless microphones have low-power transmitters (less than 0.05 watts output) which are unlikely to cause difficulty, especially if they are at least a few inches away. Note also that any medical-device disruption will cease when the RF transmitting source is turned off. Please contact your physician or medical-device provider if you have any questions, or experience any problems with the use of this or any other RF equipment.

Please note that your SpectraPulse™ system operates in a frequency band in a way which may make its use subject to certain FCC and other regulatory agency restrictions and licensing requirements. No changes or modifications may be made to this equipment except by the expressly approved responsible party for compliance. Changes or modifications could void the user's authority to operate the equipment, and will also void Audio-Technica warranty coverage. For further information, Please contact your local office of the FCC as applicable.

STATIC HAZARD. Opening this unit is likely to cause permanent performance malfunction. Evidence of opening will void warranty. Serviceable only by Audio-Technica. Contact Audio-Technica for return authorization should service be necessary

2. RP32 UWB Receiver Module

Receiver Front View
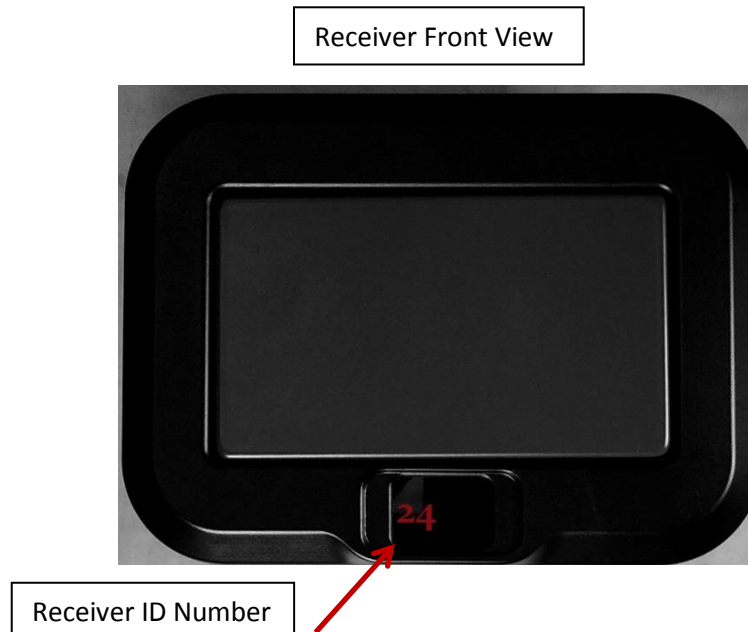
Receiver ID Number

A two digit display (7 Segment LED) is provided to automatically indicate the receiver channel number when the RP32 is connected via a CAT5 cable to the corresponding output channel of the MCU3224.   This display serves as the unit's power indicator. A visible channel number also indicates that there is a full round-trip connection between the RP and the MCU communications, confirming that the cable, the RP and the corresponding MCU3224 channel are all operating appropriately. Should the user prefer that the LED lights not be illuminated, there is a control option available on the MCU "tools" screen which allows this RP display lights to be turned off.

Receiver Rear View

RJ45 Connector for Cat5 Cable

Connection to the RP32 is via an RJ45 jack on the rear. Once connected via RJ45 and shielded CAT5 cable to an MCU, the RP is operational. There is no power switch, and no further controls necessary. The MCU3224 supplies operating power and control over RP functions/preferences is available via the tools screen of the MCU3224.

A choice of 2 mounting threads are available on the rear of the RP32. The inserts mate with either 5/8"-27 thread or ¼"-20 thread adapters.

3.   Positioning and Set Up

3.1.   Positioning

When considering where to place RP32 Receiver Modules, it is useful to think of them as "lights" with which you are attempting to cover and entirely fill a space. A rough guideline of coverage pattern is shown below. This guideline is only a starting point. The effects of multipath both to and from the RP32 are very beneficial and create additional paths which "fill in" the coverage area. Although the system will work with only a single RP32 picking up and communicating with a BP24 beltpack, we recommend that you position the RP32s such that you have a minimum of 2 actively receiving the BP24 signal at all times, and preferably a minimum of 3. There is no signal to add, subtract, or interfere, so the more RP32s that communicate with and receive a BP24 the better. Think of it as an up to 32-way digital diversity. All RP32s process all of the possible 24 channels of BP24 transmitters at all times. It does not matter which RP32 picks up a signal or sends a signal. No pairing or other coordination is required. Once power is applied to an RP32, it will automatically begin sending sync pulses to BP24 transmitters (whether or not they are present) and they will look to receive a signal from a BP24 transmitter on the correct TDMA time slot.

A note about physical obstacles: Since this system operates in a very high frequency range, the wavelengths are very short. That means that it is possible for them to "pass through" porous materials. Although it is not optimum, it is sometimes possible to place RP32s behind a surface if that surface will still allow the small 6GHz wavelength to pass. A metallic or glass or stone surface is highly reflective and is beneficial for creating supporting multipath, but it will not allow signals to pass through.

30 ft

90 ft

45 ft

120ft

65 ft
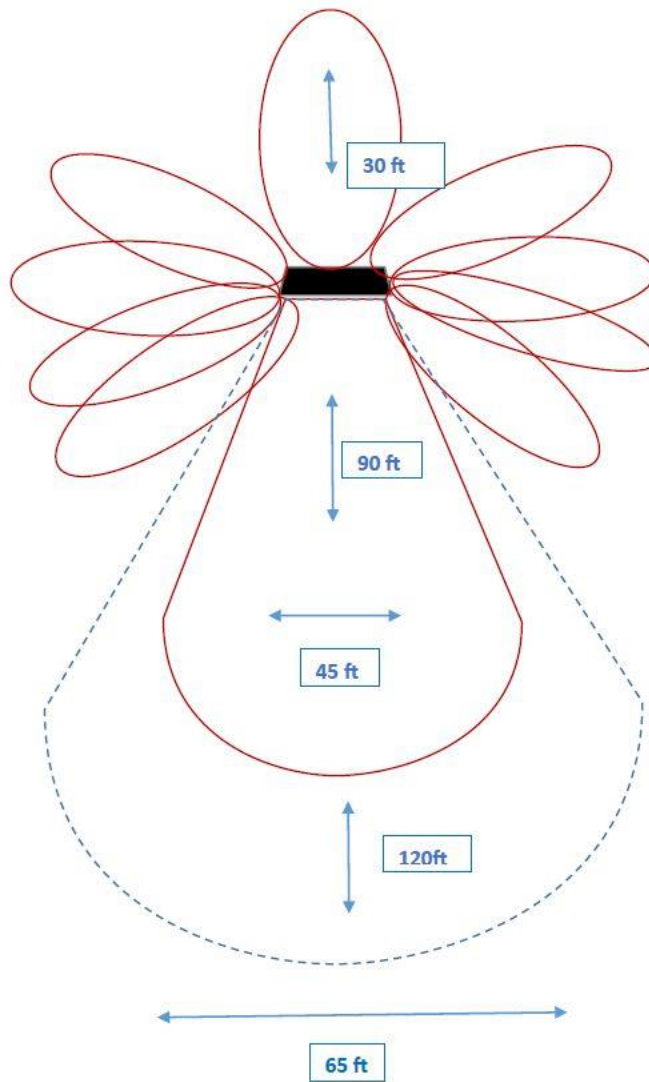
(drawing not to scale)

The red areas indicate a likely direct connection path for a single RP32. It is important to note that there are a number of side lobes (may depend upon placement) and that there is pick up and reception to the rear. The more typically expected active space is indicated via the blue dashed lines.

3.2. Matrix Screen - Receiver Measurement

The matrix screen allows the user to visualize specific connections between 32 possible receivers and 24 possible transmitters. There are two modes: Receiver Test and Transmitter Test.

In the receiver test mode the user selects a source transmitter - blue buttons on the right side of the screen - and the screen on the left indicates the active receivers currently linked to that transmitter. Active receivers which have been plugged into the system are indicated with a blue square; green fill indicates a link to the selected transmitter. It is best if at least 3 RP32s indicate a green "linked" status to a BP24 transmitter at all times. This screen is useful for experimenting with RP32 placement in order to determine the best coverage.

Mode Swap Button

Σ Mode Select
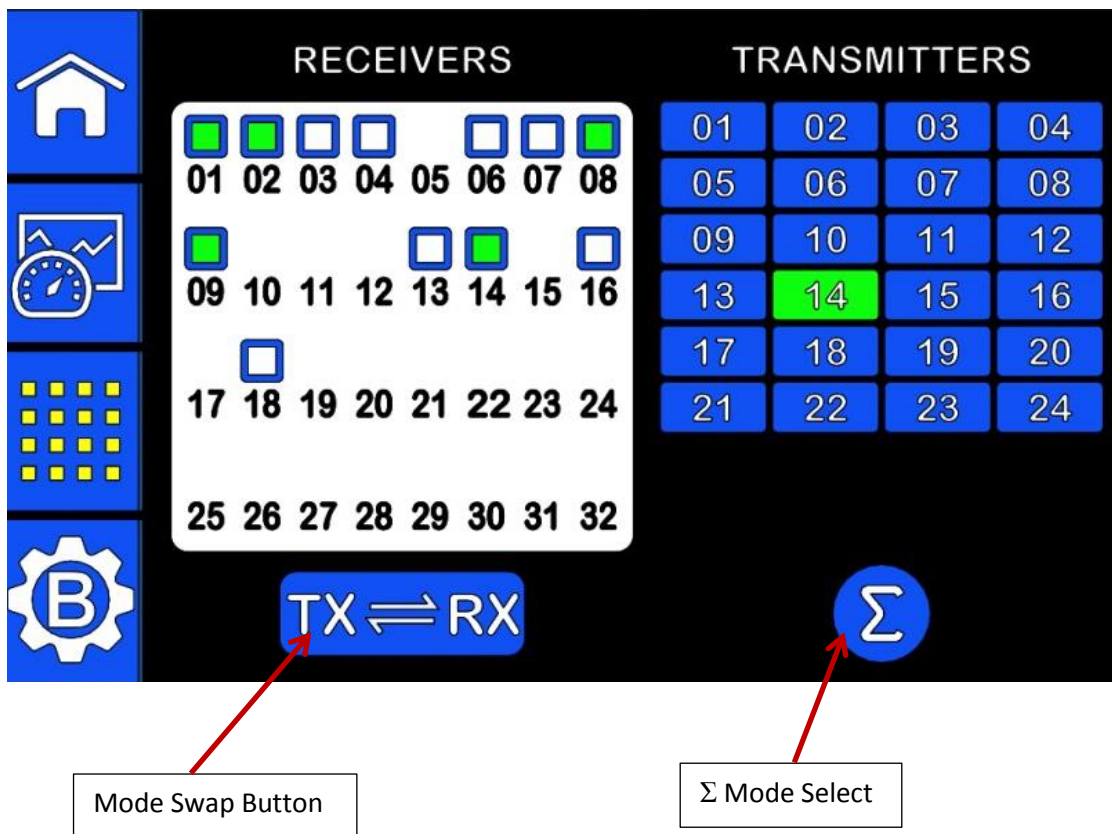
The Σ button is used to view receivers that are connected to ANY active transmitter rather than just a single transmitter. This mode is used to test which receivers are most effective in a given set up, and may also assist in receiver placement.

When the user selects the matrix screen, the system will first check for added receivers; without interrupting the operation of the active receivers or the audio output.   This gives the user a way to add receivers while the system is in active operation.   If the user plugs in a receiver it will not be active until the system goes through this process.

Pressing the mode swap button switches to Transmitter measurement mode.

4. System QUICK START

- Using a shielded CAT 5 cable (may be used with up to 1,000 feet of cable per channel) terminated with a standard RJ45 connector, plug the cable into the RJ45 input jack on the rear of at least RP32 receiver. Connect the other end of the CAT 5 cable to the RJ45 input jack on the rear of the MCU3224 main control unit. You may connect up to 32 RP32 receivers by connecting them into the corresponding channel output (1-32) found on the rear of the MCU.

    You do not need to turn the RP on. It receives power via the CAT 5 cable from the MCU 3224. The RP display should immediately light and display the channel output number to which it has been connected on the MCU.

- Apply power to the MCU3224 by connecting at least one IEC cable to AC wall supply.

- Press the front panel "power" button.

    The power light(s) corresponding to the IEC cable input will be visible on the front panel (one red and one blue), and the GUI screen will illuminate and enter a "set-up" mode while the system is normalizing and preparing for operation.

Once the system is available for operation, the GUI screen will display a "HOME SCREEN."
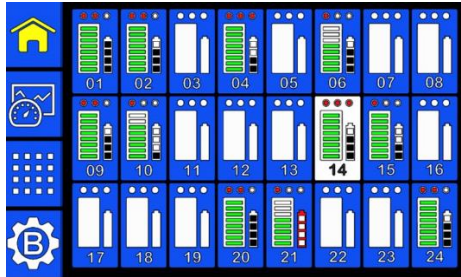
- On the left-hand side of the screen, select the "Matrix" button:
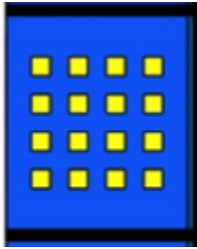
This will allow the user to view and confirm that the desired number of RPs are connected to the system with the desired channel # assignments.

- Place 2 x AA batteries into a BP24 beltpack transmitter and slide the internal power switch into the on position.

Ensure that the BP24 system ID is the same as the System ID of the MCU3224 (system will turn on in "default" system ID 1 for all devices). The System ID is visible in all screens on the left-hand side of the display for "navigation."
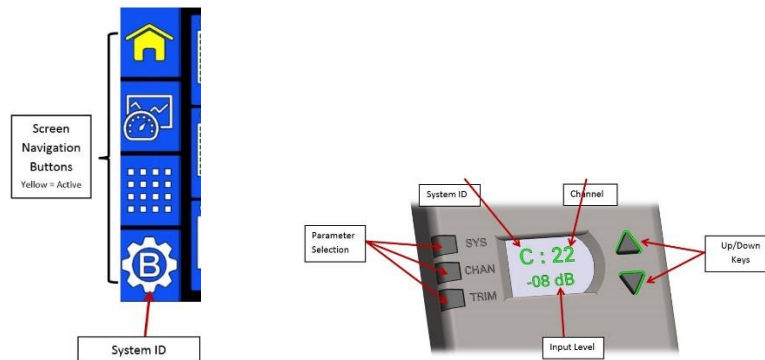
- Select the BP24 channel for operation (1 through 24)

- Select the desired BP24 gain level

- Ensure that the BP24 front surface is facing the RP32 front surface, and that they are located somewhat in proximity to each other and roughly in a line-of sight orientation. (Note that the distance of operation can be 90' or more, depending upon the particular operating environment, and line of sight operation is not strictly or fully required due to positive effects of multi-path. However, with only a single RP connected to the system, the "multiple coordinated receiver diversity" is not in operation. Thus, line of sight and proximity are more important to stable operation for initial set-up with only a single RP).

- Return to the MCU and select the "home screen"

- The BP24 that has just been turned on should be shown in the display on the channel number that you have set via the BP24 channel selection process.

- Press the GUI on the displayed channel to highlight/select the channel of the BP24 that you are operating. This will allow all information about this particular channel to be observed on the other screens. It also selects this particular channel for output to the front-mounted headphone monitor jack.

- You may now listen to your selected beltpack, or if you prefer, you can observe its operation characteristics by selecting the "transmitter detail" button:

- Repeat this process for as many RP32s and BP24s as needed for the application.

- No frequency or channel coordination is required. Simply ensure that only one beltpack channel is in operation for each channel (up to 24) in each system ID. **(Do not attempt to set 2 BP channels to the same channel # in the same system. The system will not operate).**

One-Year Limited Warranty

Audio-Technica professional wireless systems purchased in the U.S.A. are warranted for one year from date of purchase by Audio-Technica U.S., Inc. (A.T.U.S.) to be free of defects in materials and workmanship. In event of such defect, product will be repaired promptly without charge or, at our option, replaced with a new product of equal or superior value if delivered to A.T.U.S. or an Authorized Service Center, prepaid, together with the sales slip or other proof of purchase date. Prior approval from A.T.U.S. is required for return. This warranty excludes defects due to normal wear, abuse, shipping damage, or failure to use product in accordance with the instructions. This warranty is void in the event of unauthorized repair or modification, or removal or defacing of the product labeling.

For return approval and shipping information, contact the Service Dept., Audio-Technica U.S., Inc., 1221 Commerce Drive, Stow, Ohio 44224.

Except to the extent precluded by applicable state law, A.T.U.S. will have no liability for any consequential, incidental, or special damages; any warranty of merchantability or fitness for particular purpose expires when this warranty expires.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Outside the U.S.A., please contact your local dealer for warranty details.