



RANGESTAR 500 MW FM TRANSMITTER



Package Contents:

- 1-500mW RangeStar FM Transmitter – CZH-05B
- 1-12V Power Adapter with US Style Power Cord
- 1-Rubber Duck Whip Antenna

Tips & Common Rules for All Users:

1. The AC adapter supplied is designed for dry indoor use only. NEVER use the AC adapter outdoors or in wet conditions.
2. NEVER operate this transmitter without an antenna, or dummy-load connected.
3. For best results, find an open, unused frequency to transmit on (<http://www.radio-locator.com>). NEVER transmit on occupied commercial radio station frequency; for legal and ethical reasons.
4. Always follow your local regulations regarding the proper use of an FM transmitter.
5. Only use power adapters supplied with your unit. Using other types of power adapters may produce background noise with your transmitted audio and/or could damage your unit. **NOTE** 12 V 2 A is the recommended Power Adapter, never exceed 12 V!
6. When transmitting from a microphone; only use a stereo plug microphone, using any other type of microphone such as a mono plug microphone will permanently damage your unit, see "Instructions – 3. Option b)"
7. Always ensure that proper antenna tuning methods are used. Be resourceful, this Instruction Manual is only a guide...
FM Radio Transmission is a very tedious task and many variables factor into how clear your signal gets.

Instructions:

1. Connect chosen antenna or cable from antenna to antenna port (B).
2. Connect power to the Power Jack (A). "-OFF-" will be displayed.
3. Option a) Connect audio source using desired 3.5 mm/RCA x 3.5mm audio cable. Insert one end into Audio Input Jack (C) and other end of the cable to audio output jack /headphone jack/RCA out of the source device (ie: MP3 player, iPod, PC, MAC, PDA, DVD player, etc.)

3. Option b) Connect microphone by inserting a stereo plug-type microphone into the Microphone Input (D)

WARNING: NEVER USE A MONO MICROPHONE TYPE, DOING SO MAY CAUSE PERMANENT DAMAGE

4. You should pre-scan your local FM frequencies using an FM radio or www.radio-locator.com to find an unused frequency and plan to set the transmitter and antenna to this frequency.

5. Optional—**FOR ANTENNA UPGRADES ONLY.** (Skip to Step 7 if not applicable.) Refer to the antenna's tuning section.

6. Power unit ON by pressing down Power Toggle (D). LCD will come on and display a frequency.

7. Adjust the transmitting frequency using the Frequency Toggle Buttons (E).

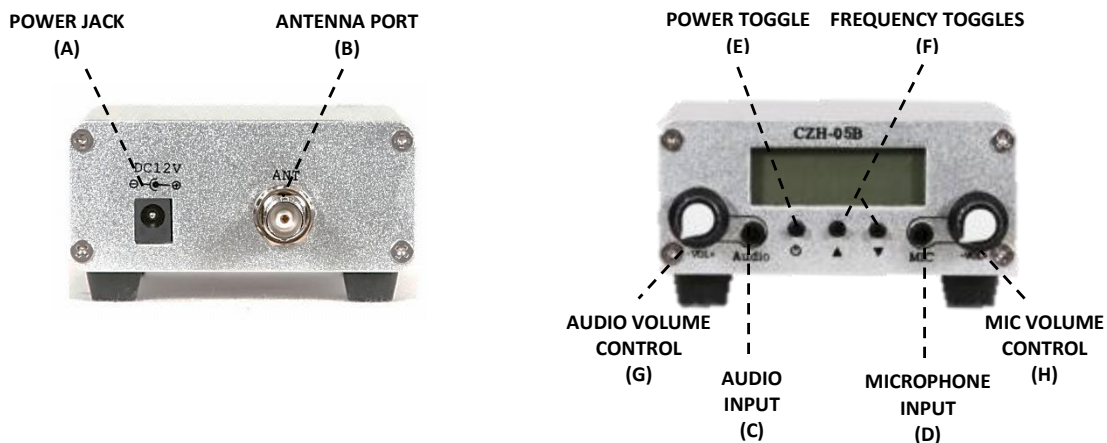
8. Set volume level on the source device. Optimal audio level will vary for each type of device and recorded audio volume. Generally you should set audio level at about 40-60% and slowly increase to optimum level

TIP 1 If audio is set too high it will cause distortion in the receiving radio such as static rather than bass.

TIP 2 When using the 500 mW RangeStar FM transmitter with a PC or MAC computer the volume level will need to be optimized at all three sources: (1) computer sound card, (2) Media player software and (3) FM receiver radio. Set audio level at about 40-60% and slowly increase to optimum level, if audio is set too high it will cause distortion in the receiving radio. Audio should also be increased at the FM radio receiver to optimum level. In addition, it is recommended to also toggle the music player's equalizer (iTunes, Windows Media Player, etc.).
















9. Set volume level on FM transmitter using Audio and Microphone Volume Controls (G & H) and then adjust on radio receiver: When the source audio level is optimized you should be able to have full audio level range with the FM receiver radio without any distortion and crystal clear audio. Repeat until sound is satisfactory.

NOTE The RangeStar FM Transmitter's volume should not be adjusted to match local radio station's volume levels. Please understand that the RangeStar is an amateur version of their complex, professional equipment.



Setting and Adjustment of Output Power Special Functions

Applies to all 2010 V1.2 versions or later with two level power adjustment: High power (H):> 0.5W/500mW; Low-power (L): <0.1W/100mW

1. First press and hold the power switch  (E) while inserting the power adapter into the Power Jack  (A).
2. Release the power switch  (E) after LCD screen shows the "H" or "L". Through the Frequency Toggles  /  (F) "H/L". Press  or  to toggle the LCD screen display between H or L. Again, "H" is the output power > 500mW; "L" is the output power <100mW.
3. Press the power switch  (E). The LCD screen displays the default setting of "108.00MHz". This is the highest frequency operator prefers to use. Through the  /  it can be changed from 76.00 – 108.00 MHz. Again press the power switch  (E). Now the LCD screen displays the default setting of "87.00MHz". This is the lowest frequency operator prefers to use. Again, through the  /  it can be changed from 76.00 – 108 MHz. **Lowest frequency high-end cannot be higher than the highest frequency.**
4. Press and hold the power switch  (E). Wait 3 seconds to exit the output power adjustment menu and LCD screen will display "OFF". Again press the power switch  (E) and the transmitter will power on and transmitter will begin transmitting.

A brief introduction to the rules of the FCC and your FM Transmitter

It is the policy of DAGCO Electronics, that knowing and observing the lawful use of all transmitters is a first responsibility of our end users. We do not endorse any unlawful use of any of our transmitters, and we try to give you as much common sense help about normal and lawful use as we can. Further, it is the policy of DAGCO Electronics to cooperate with all applicable federal regulations in the design and marketing of our electronic devices. Finally, we urge all of our overseas customers to observe the regulations of their own national telecommunications authorities. In all instances, compliance with FCC rules in the operation of what the FCC terms an "intentional radiator" is always the responsibility of the user of such an "intentional radiator".

DAGCO Electronics only offers this information to make the user aware of the full impact a transmitter can have. In no way should this brief discussion be construed as a definition of the FCC rules, it is the users obligation to obtain a copy of the rules and operate legally according to them. ***DAGCO Electronics makes no representation as to the following discussion being legally correct - it is simply offered as an introduction to the responsibilities that a user must realize.*** To order your copy of the FCC rules part 15, call the US Government, Superintendent of Documents, at 202-512-1800, or fax at 202-512-2250. To order the correct document, ask for "CFR Title 17: Parts 1 to 199." The cost is \$24.00. Master Card and Visa are accepted.

The present edition of Part 15 of the FCC rules provides detailed guidance on ALL aspects of using a low-power transmitter. The main points to consider are; to remain within the field strength limitations, that you may not cause any interference whatsoever to licensed broadcast services, and that you must be willing to put up with any interference that you may experience. Remember, the FCC doesn't need to be bothered by policing a privilege given to unlicensed operators. If the rules are flagrantly violated, they might just revoke the privilege altogether!

If you become further fascinated with the service rendered by low-power broadcasting, other FCC regulations explain how to apply for a license or other authorization which may permit you to upgrade your equipment to accomplish any objective which the FCC sees to be in the public interest and not interfering with other authorized uses of the radio spectrum.

Lawful use suggestions:

- Follow instructions.
- Use the stock antenna supplied within the case.
- Do not modify your transmitter in any way.
- Check your intended operating frequency very carefully, to ensure you will not cause interference to reception of licensed broadcasting. (<http://www.radio-locator.com>)
- If you receive ANY complaint about your transmissions interfering with broadcast reception, stop or change your operation IMMEDIATELY.
- If you are contacted by the FCC regarding use of this device, cooperate fully and promptly.
- Do your own homework and research to understand and comply with present and future FCC rulings concerning devices of this kind. Do not rely only upon this short discussion.
- Do not use made-up "station call signs" to identify your transmissions. Only the FCC has the authority to issue such call signs. Use some other way to identify your transmitting activity, such as "This is Stereo 90.5, Seabreeze School Student Music Radio," and so forth.
- Identify the location and purpose of your transmissions from time to time. This is common courtesy toward other persons who may hear your signal. The FCC is toughest about clandestine transmission which cost time and money to track down.
- Do not assume that the mere fact that you purchased this transmitter gives you any specific right to use it for any purpose beyond generating a low-level RF signal which is barely detectable beyond the perimeter of your personal dwelling space.

Finally, the FCC Rules call for the posting of printed notices on devices intended for non-licensed operation under Part 15 Rules. You will find such notices written up for the front or back of the instruction manual for nearly any computer or video accessory that you have seen in recent months. Consult the Part 15 Rules for the exact wording of such notices. Following is a text for such a notice which responds to FCC rule making intentions:

Final Comment:

A well-informed person will see today's FCC Rules to be evolving and progressively less restrictive. Even though today's technology is far more complex than what was possible at the time of the Communications Act of 1934, the FCC rules are becoming more relaxed, giving radio experimenters more and more opportunities to explore many frequency bands, using many communications modes, with no need for a formal license of any kind. A thorough study of Part 15 of the FCC Rules, which is completely beyond the purpose of this brief discussion, will show you many legal uses of radio transmitting devices which do not require licensing, either amateur or commercial. To provide more personal and club radio learning opportunities, and to cut down on administrative costs, today's FCC permits far more non-licensed activity than at any time in previous history. On the other hand, today's FCC enforcement actions get bigger fines and real prison terms for scofflaws! From CB radio to easy entry-level Amateur Radio with long-term licensing, to numerous unlicensed Part 15 operations, the FCC is beginning to look out for the interest and good plans and intentions of private citizens and school-community groups as never before in radio communications history.

NOTICE:

The individual users of this device assume responsibility for lawful uses conforming to FCC Part 15 Rules. Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and**
- 2. This device must accept any interference received, including interference that may cause undesired operation.**

Troubleshooting:

1. Transmitting volume is too low:

Slowly increase volume level of audio source device to a desirable level. When using transmitter with PC or Mac computer the volume will need to be set at three different levels, see step #9 Tips in above instructions section.

2. Transmit range is too low:

The transmit range will vary as per your environment, antenna type, power setting, and/or frequency setting. Placing the transmitter (or antenna) on the highest altitude inside or outside of a building with the least amount of obstacles will give you the optimum range.

3. Sound from SatelliteReceiver/DVD/BluRay is distorted:

These types of audio/video devices generally do not have volume control capabilities and they only output a default volume levels. Therefore, simply adjust (G) Audio Volume Control. If this method fails, DAGCO recommends purchasing an RCA or 3.5mm cable with a built in volume reducer, or employ the use of a pre-amp.

4. Sound from input device is distorted:

If your toggling the volume through both the transmitter and input device fails to correct, please seek help in adjusting the input device's equalizer. The transmitter cannot handle mass amounts of bass or treble. In some cases it may even be a result of your receiving device causing the distortion.

5. Constant hum on radio:

If using an antenna upgrade, proper grounding techniques and tuning of the antenna are very important steps (See the Antenna Tuning Section of your Antenna and ensure measurements are correct and then adjust as needed). Every frequency has a unique antenna setting! Other ways to correct hum include using a ferrite bead on the audio cable coming into the transmitter. If it persists DAGCO will briefly troubleshoot, but many times it is a result of a faulty power supply. If you have an additional power supply that eliminates the hum, please notify us and we will replace the faulty one. Transmitters are typically not the impetus of hum, it is typically an outside factor such as the cabling, antenna, input device, or power supply.

SPECIFICATIONS

1. Power supply:	DC12V
2. Maximum operating current:	500mA
3. Ambient temperature:	-5~40°C
4. Frequency Range:	76MHz~108MHz
5. Frequency Step:	100KHz (0.1 MHz)
6. Frequency Stabilize Style:	PLL
7. Output power:	0 to 500mW±10%
8. Output resistance:	50 OHM
9. Modulate Style:	WFM
10. Maximum Deviation:	±75KHz
11. Parasitic AM:	<0.2%
12. Audio Frequency Response:	50Hz~15000Hz
13. Audio input level:	-15dbV (Max: -30dbV)
14. Input Jack:	3.5mm
15. MIC input Level:	-15dbV (Max: -45dbV)
16. MIC Jack:	3.5mm
17. Stereo Separation:	Better than 30db
18. S/N:	Better than 50db
19. Antenna Connector:	BNC type

DAGCO ELECTRONICS

For warranty service, contact DAGCO Electronics:

sales@dagcoelectronics.com <http://www.dagcoelectronics.com>