PROCASTER AMTX100 AM Transmitter
Installation and Operation

(PRELIMINARY)

Installation

PROCASTER™ contents

- PROCASTER™ transmitter module
- Studio interface module
- Antenna tubes (3 pieces)
- Hardware
- AC wall adapter
- Assembly/installation instructions

Changes or modifications not expressly approved by ChezRadio could void user's authority to operate the equipment.

SAFETY WARNING
TO PREVENT ELECTROCUTION ALWAYS BE AWARE OF NEARBY ELECTRICAL POWER WIRING AND MOUNT THE ANTENNA FAR ENOUGH AWAY SUCH THAT IF THE ANTENNA FELL DOWN, THERE WOULD BE NO CHANCE OF CONTACT.

Before starting your installation, consider the following carefully:

- Is the chosen frequency clear?
- Are there nearby obstructions such as buildings, trees and power lines etc?
- Where are you going to mount the transmitter?
- Where are you going to ground it?
- What range are you expecting to get?

For a successful installation, follow these steps...

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Step 1. Choose a Quiet Channel

Drive around your chosen broadcast area and listen for clear channels. Note: car radios are usually more sensitive than portables, so that should be considered too. If you want to broadcast at night, you would have to check if the channel is clear then. It's more difficult to broadcast at night because changes in the ionosphere cause signals from higher-powered radio stations to reach your broadcast area; so bear that in mind. Try to choose one of the highest 42 channels available for the PROCASTER™ by setting the option switches accordingly. The higher the frequency, the better the range because of the restrictive short antenna length.

Step 2. Install Location

Higher mounted antennas usually result in better range. The PROCASTER™ mounting bracket is intended for mounting on a flat vertical surface. Optional kit # XXXXX allows pole mounting. Make sure you can access the transmitter for tuning once it is in its final position. A good height above earth ground is about 25 feet. The roof of a 2-storey building is a good choice.

Step 3. Assemble Antenna

Three aluminum tubes (large 5/8", medium 1/2" and small 3/8") are assembled together to form a 103 inch antenna. These sections are held together using 2 stainless steel pipe clamps.

- Join the large tube to the medium tube
    - slide a pipe clamp over the mid-point of the slotted end of the large tube
    - insert the medium tube into the large tube lining up the black dot
    - tighten pipe clamp snugly using a 1/4" nut driver
- Join the small tube to the medium tube
    - slide a pipe clamp over the mid-point of the slotted end of the medium tube
    - insert the small tube into the medium tube lining up the black dot
    - tighten pipe clamp snugly using a 1/4" nut driver
- Fasten the assembled mast to the transmitter using (2) #10 lock-washers and (2) locknuts - refer to E
    - Use a screwdriver to prevent the bolt from turning while tightening the nuts - refer to F
    - Tighten snugly (don't over-tighten)
- Antenna assembly is now complete

(antenna assembly pics)

Step 4. Mount External Transmitter

In all mounting cases, ensure you can reach the unit for tuning once installed!

Direct wall mounting

Mount the PROCASTER™ directly to a flat vertical surface using the 4 holes in the case mounting plate. Make sure that there is sufficient space between the antenna mast and the rear wall such that snow/ice does not cause a short.

(direct on wall)

Direct wall mounting with standoff brackets
Use Radio Shack 4 inch Antenna Mast Wall Mount kit catalog # 15-883 to hold the PROCASTER™ further away from the wall.

(direct on wall with brackets)

Pole mounting
For pole mounting use a pair of 2 inch spacing U-bolts with formed curved backing plates – like the ones in the following picture. The backing plate prevents the case mounting areas from bending when tightening onto the pole and makes for a more secure installation.

(pole mounting)

Step 5. Install Ground

Connect the copper grounding lug shown below to a suitable ground.

(grounding lug)

Good grounding is extremely important for optimum antenna performance and is required for safe operation of the lightning protection circuitry. Typical grounds include:

- Copper clad steel grounding rod at least 8 ft into earth ground
- Water pipe ground
- Radial ground system
- Metal roof

Warning: FCC rules (47 part 15.219) state:" the total length of the transmission line, antenna and ground lead (if used) shall not exceed 3 meters." [3 meters = 118 inches]

The PROCASTER™ has an attached 103 inch antenna measured from its tip to the lower mounting bolt which is the connection of the transmitter output. It has no transmission line. A 15 inch maximum ground lead is allowed from the grounding lug to a massive ground.

Step 6. Connect Power and Audio Wiring

The PROCASTER™ connects to the studio interface with 4 conductor CAT3 wire. Because the audio is balanced and the power consumption is low, several hundred feet of wire can be used without issue. Proceed as follows:

- Open the PROCASTER™ cover by loosening the 3 cover clamps
- Insert 4 conductor CAT3 wire through liquid-tight grommet on the underside
- Connect:
    - RED: +12V
    - GREEN: 0V
    - YELLOW: AUD +

    - BLACK: AUD -
- Tighten nut on liquid-tight grommet

(wiring pic)

Step 7. Connect to indoor Studio Interface Module

Bring the 4 conductor CAT3 cable into the studio area. Proceed as follows:

- Remove the 4 rubber feet from the studio interface enclosure
- Slide off the cover
- Pass the 4 conductor CAT3 cable through the rear bushing
- Connect:
    - RED: +12V
    - GREEN: 0V
    - YELLOW: AUD +
    - BLACK: AUD -

(rear of studio interface)

Step 8. Connect an audio source

The PROCASTER™ is fitted with a universal 3.5mm stereo input jack similar to I-pod™ and modern car audio equipment. It has been designed to accept stereo left and right audio channels and mixes them into a mono signal.

(front of studio interface)

The built-in audio processor has a fairly wide accommodation range and will automatically adjust audio level for optimum sound quality. In addition there is an input audio level adjustment control (normally set at mid-point) accessible through the front panel using a small jewellers screwdriver. The audio level can be set from approximately 200mV to 3V which will accommodate most audio devices.

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Step 9. Power Up the Procaster ™
Connect the AC wall adapter.

Step 10. Choose Channel Frequency
To choose the desired broadcast channel, refer to the Option Switch section. Note: the option switch also allows additional settings to be made.

Step 11. Tune Antenna
Once the broadcast channel is set, turn the antenna tuning capacitor using a small bladed screwdriver until a maximum reading is seen on the tuning meter. Make sure to stand clear of the antenna as body capacitance will affect tuning. If the reading is not "sharp" and strong, re-check your ground connection.

(tuning)

Antenna tuning is now complete. (Now that was easy!)

Step 12. Final Checkout & Adjustments
Check your sound level and range by listening on a radio. The broadcast signal should be clear and strong when closer to the transmitter, with more noise heard the further you move away.

The built-in audio processor is what makes the PROCASTER™ sound like a big station. If you want to use your own external audio processing equipment, the PROCASTER™ audio processor can be disabled by changing the option switches.

The PROCASTER™ audio processor can be adjusted to suit personal preferences as follows:

Compression: Turning the compression control CW boosts quieter parts of the audio to be more equal to the louder parts. This makes the overall audio louder resulting in a stronger signal and greater range. The tradeoff is the subjective audio quality depending on the level of compression.

Modulation Depth: Turning the modulation depth control CW increases the audio modulation level of the AM signal.

Limiting: Limiting is automatic to prevent sideband 'splatter' and both the above adjustments have no affect on the 'hard limiter' built into the audio processor.

Congratulations! You have set up your broadcast station.

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Specifications

Outdoor Transmitter Module	
Modulation scheme	AM
Harmonic suppression	>30dB
100mW input power control	Automatic self-regulating
Frequency selection	42 channel PLL
Frequency range	1290kHz to 1700kHz
Antenna tuning	manual adjust with meter
Treble boost option	yes
Built-in audio processor (may be disabled)	Compression control Modulation depth control Fast/slow release (selectable)
Audio input	Balanced transformerless
Frequency response	20Hz to 20kHz +/- 3dB
Input voltage	12VDC 60mA
Enclosure	NEMA 4X
Mounting	4 holes (2 in x 6.31 in)
Antenna	103 in, 3-section, aluminum
Approvals	FCC Part 15.219 Industry Canada RSS-210
Weight	6lb
Lightning protection	350V 1ns
ESD protection	Audio and power
Connection to Studio Control	4 conductor CAT3

Indoor Studio Module	
Audio input	3.5mm stereo jack
Input mixer	Mixes left and right audio
Audio level adjust	200mV to 3V
Power input (switch selectable)	12VAC or 12VDC
Audio output	Balanced transformerless
Weight	0.5 lb
ESD protection	Audio and power
Connection to External Transmitter	4 conductor CAT3

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Option Switches

The function of the 10 position switch located in the PROCASTER™ is as follows:

- Switches S1 - S6 allow selection of 1 of 42 broadcast channels
- Switch S7 selects 1 of 2 audio processor response rates (music or voice)
- Switches 8 and 9 turns the audio processor on or off (when external processing is used)
- Switch 10 turns on the treble boost

(switch)

Miscellaneous Functions		
S7 ON		fast response suited to music sources
S7 OFF		slow response suited to voice sources
S8 OFF	S9 ON	audio processor on
S8 ON	S9 OFF	audio processor off
S10 ON		treble boost on
S10 OFF		treble boost off

Channel Settings						
Freq kHz	S1	S2	S3	S4	S5	S6
1290	ON	ON	ON	ON	ON	ON
1300	OFF	ON	ON	ON	ON	ON
1310	ON	OFF	ON	ON	ON	ON
1320	OFF	OFF	ON	ON	ON	ON
1330	ON	ON	OFF	ON	ON	ON
1340	OFF	ON	OFF	ON	ON	ON
1350	ON	OFF	OFF	ON	ON	ON
1360	OFF	OFF	OFF	ON	ON	ON
1370	ON	ON	ON	OFF	ON	ON
1380	OFF	ON	ON	OFF	ON	ON
1390	ON	OFF	ON	OFF	ON	ON
1400	OFF	OFF	ON	OFF	ON	ON
1410	ON	ON	OFF	OFF	ON	ON
1420	OFF	ON	OFF	OFF	ON	ON
1430	ON	OFF	OFF	OFF	ON	ON
1440	OFF	OFF	OFF	OFF	ON	ON

1450	ON	ON	ON	ON	OFF	ON
1460	OFF	ON	ON	ON	OFF	ON
1470	ON	OFF	ON	ON	OFF	ON
1480	OFF	OFF	ON	ON	OFF	ON
1490	ON	ON	OFF	ON	OFF	ON
1500	OFF	ON	OFF	ON	OFF	ON
1510	ON	OFF	OFF	ON	OFF	ON
1520	OFF	OFF	OFF	ON	OFF	ON
1530	ON	ON	ON	OFF	OFF	ON
1540	OFF	ON	ON	OFF	OFF	ON
1550	ON	OFF	ON	OFF	OFF	ON
1560	OFF	OFF	ON	OFF	OFF	ON
1570	ON	ON	OFF	OFF	OFF	ON
1580	OFF	ON	OFF	OFF	OFF	ON
1590	ON	OFF	OFF	OFF	OFF	ON
1600	OFF	OFF	OFF	OFF	OFF	ON
1610	ON	ON	ON	ON	ON	OFF
1620	OFF	ON	ON	ON	ON	OFF
1630	ON	OFF	ON	ON	ON	OFF
1640	OFF	OFF	ON	ON	ON	OFF
1650	ON	ON	OFF	ON	ON	OFF
1660	OFF	ON	OFF	ON	ON	OFF
1670	ON	OFF	OFF	ON	ON	OFF
1680	OFF	OFF	OFF	ON	ON	OFF
1690	ON	ON	ON	OFF	ON	OFF
1700	OFF	ON	ON	OFF	ON	OFF

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Compliance Statement

AM Transmitter
Model: AMTX100
Manufacturer: ChezRadio
FCC ID: VCJ-AMTX100
IC: 7378A-AMTX100

This device complies with Part 15 of the FCC 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.

Warning:

Changes or modifications not expressly approved by ChezRadio could void the user's authority to operate the equipment.