

Advanced Telemetry Systems

R410 User Manual



ATS model R410 Scanning Receiver

Introduction:

The model R410 Scanning Receiver may be used for all types of animal tracking field work. It features easy-to-use front panel push button controls. It covers a frequency range of 4 MHz with 1 kHz channel spacing. Any of the 4000 frequencies within that range may be entered in order to receive transmitter signals. Up to 50 channels can be stored into memory for scanning.

All power, volume, RF gain, and frequency input and scanning controls are located on the front panel. A scanning feature allows the user to automatically scan up to fifty frequencies, or channels. The dwell time, or scan rate, is user adjustable from one to 60 seconds. This scan feature allows the user to continuously listen for up to fifty targets in a very short period.

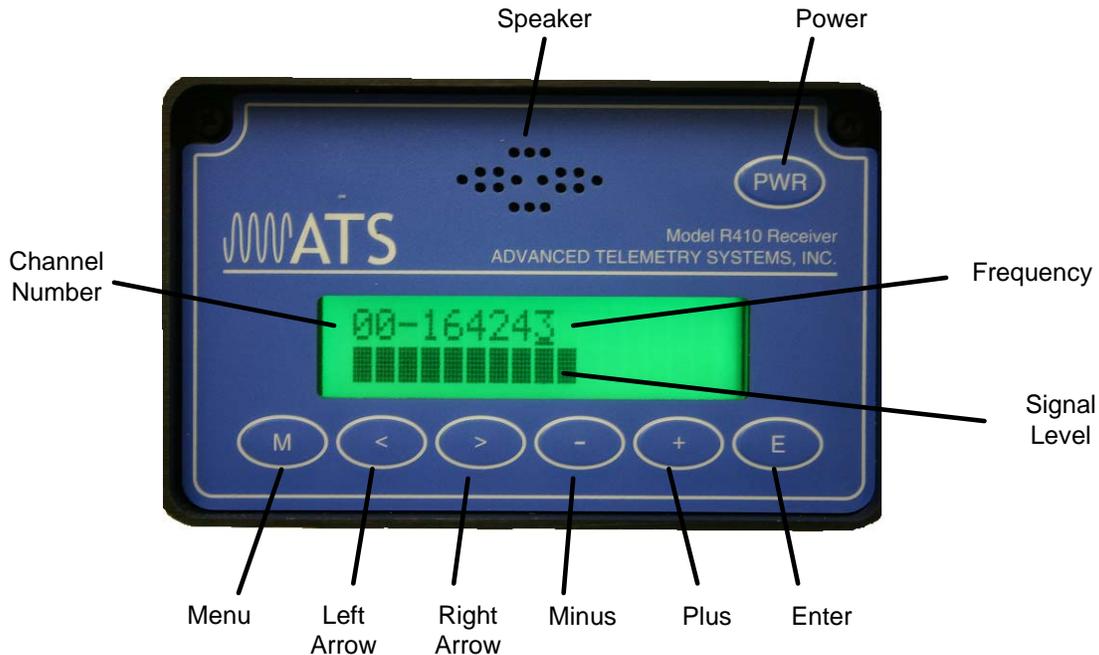
A male BNC type connector is located on the back panel of the unit in order to connect an antenna. Also, the 4 user replaceable AA batteries needed to power the unit are accessible there.

A built-in speaker allows the user to monitor activity on the frequency, or a headset may be used by connecting to the headset jack on the front panel of the unit. The built-in speaker is disabled when the headset jack is used.

Assistance:

If you would like assistance with, or have questions regarding the operation of the R410, or with its use in animal tracking, please contact ATS Customer Support, at 763-444-9267.

R410 Front

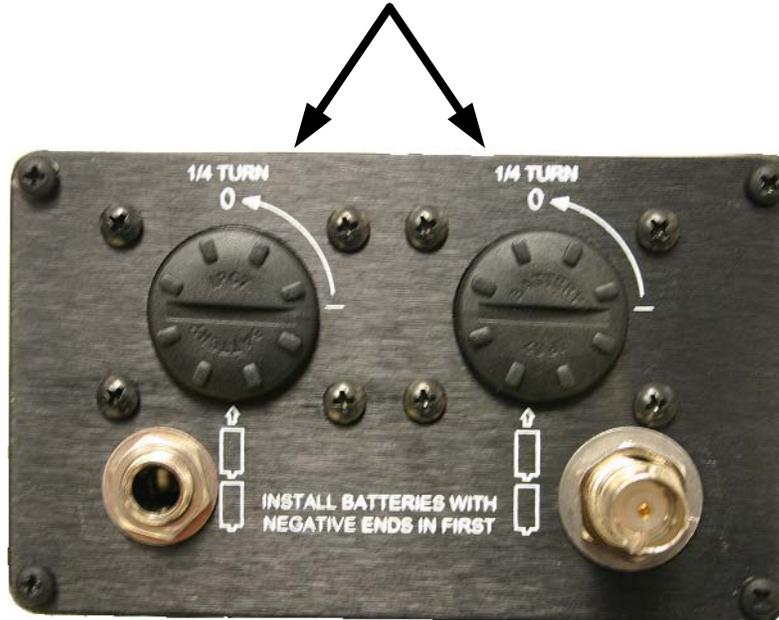


Keypad Buttons:

	Power	Turns ON or OFF the receiver. When the receiver is ON, pressing the power button momentarily will turn ON or OFF the backlight
	Menu	Press to advance to the next menu item. Sequence is: Main Menu – RF Gain – Audio Level – Channel Scan – Setup Menu
	Left arrow	Moves the cursor to the left in the Main Menu (cursor will loop from far left to far right). Decreases the level for the Gain Menu and decreases the level for the Audio Level Menu.
	Right arrow	Moves the cursor to the right in the Main Menu (cursor will loop from far right to far left). Increases the level for the Gain Menu and increases the level for the Audio Menu.
	Minus	Decrements the numeric value in the main menu. Decreases the level for the Gain Menu and decreases the level for the Audio Level Menu. Changes the ON/OFF selection for the Channel Scan and Gain Reset Menu.
	Plus	Increments the numeric value in the main menu. Increases the level for the Gain Menu and increases the level for the Audio Level Menu. Changes the ON/OFF selection for the Channel Scan and Gain Reset Menu.
	Enter	Saves the frequency for the channel number in the screen in the Main Menu. Saves the changed setting and returns to the Main Menu for the other menu items. (Gain, Audio, Channel Scan). Also enters the Setup Menu.

R410 Back

Turn Battery Caps counterclockwise $\frac{1}{4}$ turn to remove the protective covers from the receiver. When reinstalling battery caps turn clockwise $\frac{1}{4}$ turn. The cap will lock in place when at the “-“ marks



$\frac{1}{4}$ " Headset Jack

BNC Antenna Connector

Battery Life: A fresh set of alkaline batteries will last approximately 18 hours.

The battery life was tested using Varta "Power One" LR6/AA alkaline batteries (Typical battery capacity of 2600 mAh)

A low battery indicator (flashing "LOW" "BAT") will display in the upper right corner of the display when the battery voltage reaches approximately 4.5V. When the low battery indicator is flashing in the screen, there will be approximately 1 hour of use out of the batteries.

Battery Removal:

Turn battery caps $\frac{1}{4}$ turn clockwise until the coin slot is at the "O" position. Lift cap off. Remove batteries.

To install batteries, place a set of qty. 2 AA (qty. 4 total) batteries in each battery tube with the negative ends in first. Place the battery tube caps on, aligning the coin slots with the "O" position, and turn the cap clockwise until the coin slot is at the "-" position. When at the "-" position, the caps will be locked in place.

Power ON:

Hold the power button "PWR" for at least 1 second.

A startup splash screen will appear, and then the receiver will go to the main menu and the frequency settings will be recalled to the last state it was in when powered down.

Press  for at least 1 second

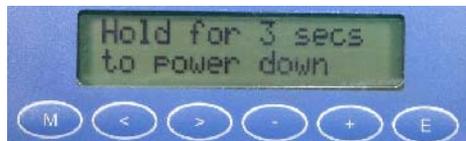


Note: If no buttons are pressed within 20 minutes, the R410 will shutdown automatically.

Power OFF:

Hold the power button "PWR" for at least 3 seconds. A message indicating to hold the power button for three seconds to shutdown will appear. The display will go blank after 3 seconds. When the power button is released after the screen has gone blank, the unit will shutdown.

Hold down  button for at least 3 seconds



Backlight:

Press the power button "PWR" for less than 1 second to turn ON or OFF the backlight.

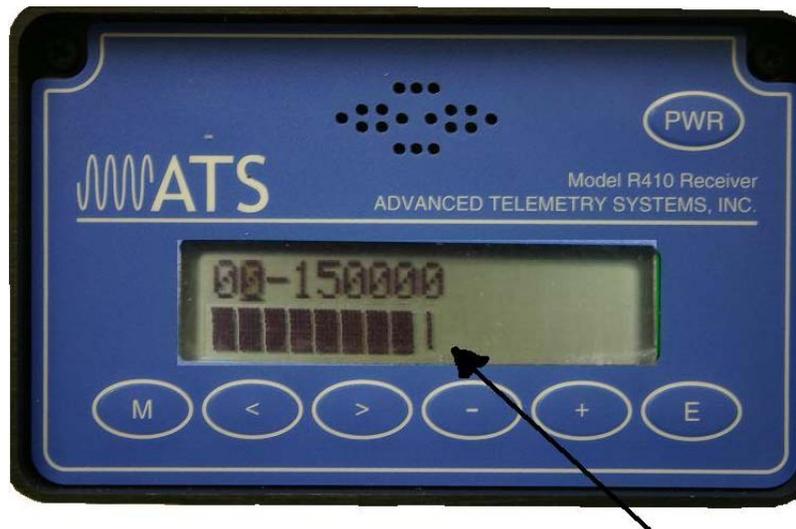
Press the  button momentarily (less than 1 second)



Signal Level:

The signal level is helpful detecting the strongest signal. The incoming signal needs to be above a certain level to be displayed in the screen. With the RF Gain at maximum setting, the signal would need to be around -115 dB or greater to be displayed in the screen. The signal level reading is a relative measurement and is to be used as a helpful guide. Not all receivers will display the same signal level for the same incoming signal. Since it is a relative measurement, there is no calibrated setting for the receiver to match the signal level for all receivers.

The R410's Signal Level is detected digitally. The incoming signal is sampled 5 times ever 500 milliseconds and the level detected is then displayed to the screen. Since the signal is sampled at a specific rate, the signal level could appear to be lower at times and even drop to no signal level sometimes when detecting a pulsing signal from a transmitter. This is because the transmitter pulse rate and the digitally sampled signal strength may not align up with each other at all times.

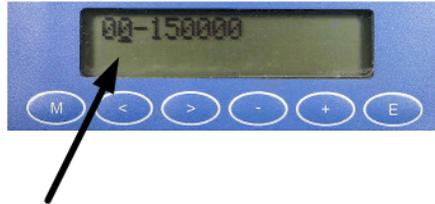


If the signal level is at the maximum level (16 bars), adjust the RF Gain to a lower setting to lower the receiver sensitivity, which will lower the signal level for the incoming signal. With the signal level lower than the maximum displayed level, the strongest signal will be easier to locate using the signal level meter.

To change the frequency:

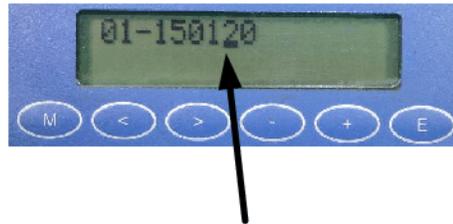
If the frequencies to be used have previously been stored in memory, use the + or – keys to move through the channels with the cursor in the channel number position. To get to larger channel numbers more quickly, the 10's digit can be increased or decreased. Also, holding the + or - keys in will automatically increase or decrease the numbers until the key is released.

If the Channel Scan feature is ON, the channels will advance at the entered scan rate time. The channels can still be manually incremented or decremented with the + or – keys with the Channel Scan feature turned ON.



If frequencies are stored in memory, use the  or  keys to increment or decrement the channel number to change frequencies,

If the frequency needs to be changed or if the frequency to be used is not stored in memory, use the < or > arrow keys to move the cursor from the channel key to the frequency position to be changed. Use the + or – keys to increment or decrement the numeric value the cursor is located at. Holding the + or - keys in will automatically increase or decrease the numbers until the key is released.



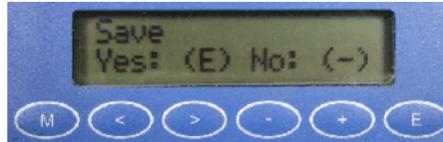
To manually change the frequency from the Main Menu Screen, use the  or  keys to move the cursor to the frequency position desired to be changed. Use the  or  keys to increment or decrement the frequency for the position the cursor is located at.

The R410 will recall the frequency used by the receiver when powered down.

Note: When the channel number is changed, the frequency stored in memory for that channel will be recalled to the screen. If the frequency has been manually changed and the channel number is changed, the manually changed frequency will not be recalled if it has not been stored to memory.

To save a frequency to a channel position from the Main Menu:

Change the channel number to the desired number for the new frequency using the + or - keys. Change to the desired frequency using the < or > and + or - keys. Press the "E" button to save the frequency. A second screen will appear to verify the frequency is to be saved. The saved frequency will be saved to the channel number displayed in the screen.



To save a frequency Press the  key.

A second screen will appear to make sure the frequency is to be saved. The frequency will be saved to the channel position indicated in the screen when the save key was pressed.

Note: A frequency cannot be saved when the Channel Scan feature is turned ON.

Change the RF Gain level:

From the main menu, press "M" once to get to the RF Gain Menu. Use the > or + keys to increment the gain level. Use the < or - keys to decrement the gain level. Pressing the keys once will change the level by one of the 32 possible level settings. Holding the keys in will automatically increase or decrease the level until the key is released. Adjusting the gain level, adjusts the sensitivity of the receiver.



From The main menu Screen, press  once to get to the RF Gain Screen



Press the  or  or  or  keys to change the RF gain Level.

To save the new gain level setting and return to the Main Menu, press the  key.

To save the new gain level setting and move on to other menu screens, press the  key.

When the channel number is changed, the Gain setting will return to the Maximum level for maximum sensitivity when a new frequency is scanned. Also when the receiver is turned on, the gain setting will be set to maximum level.

Change the Audio Level:

From the main menu, press "M" twice to get to the Audio Level Menu. Use the > or + keys to increment the audio level. Use the < or - keys to decrement the audio level. Pressing the keys once will change the level by one of the 32 possible level settings. Holding the keys in will automatically increase or decrease the level until the key is released.



From The main menu Screen, press  twice to get to the Audio Level Screen



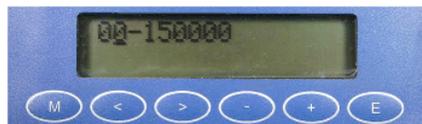
Press the  or  or  or  keys to change the Audio Level.

To save the new audio level setting and return to the Main Menu, press the  key.

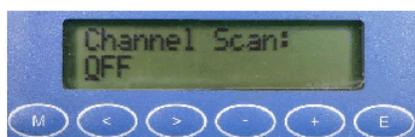
To save the new audio level setting and move on to other menu screens, press the  key.

Turning ON or OFF the Channel Scan feature:

From the main menu, press "M" three times to get to the Channel Scan Menu. Use the + or - keys to turn ON or OFF the Channel Scan feature.



From The main menu Screen, press  three times to get to the Channel Scan Screen



Press the  or  keys to turn ON or OFF the scan feature. The scan time is set in the setup menu.

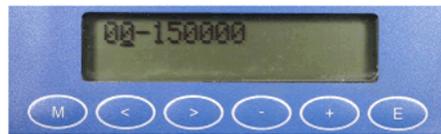
To save the new channel scan setting and return to the Main Menu, press the  key.

To save the new channel scan setting and move on to other menu screens, press the  key.

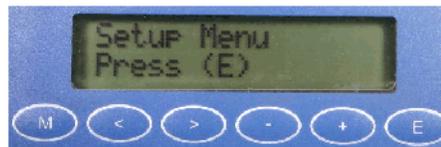
Setup Menu:

From the main menu, press “M” four times to get to the Setup Menu. Press “E” to enter the Setup Menu.

To exit the Setup Menu and return to the Main Menu, press the “M” key.



From The main menu Screen, press  four times to get to the Setup Menu Screen

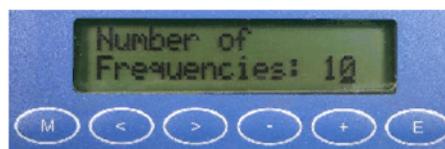


Press the  key to enter the Setup Menu Screen.

Press the  key to return to the Main Menu Screen.

1) Number of Frequencies:

Enter the number of frequencies (channel numbers) to be scanned. There are up to 50 possible channels to scan. To change to larger channel numbers more quickly, the 10's digit can be increased or decreased. Also, holding the + or - keys in will automatically increase or decrease the numbers until the key is released.



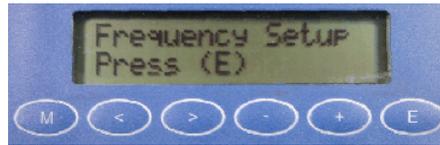
Using the  or  keys, enter the number of frequencies to be stored to channel locations.

Press the  key to store the entered number and move to the next Setup menu screen

Press  to save the number of frequencies and move on to the next Setup Menu item.

2) Frequency Setup Screen:

The next Setup Menu item after the Number of Frequencies screen is the Frequency Setup screen.



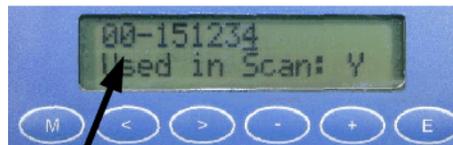
Press  to enter the Frequency Setup to edit the frequencies for the channel numbers. At any time to escape from the Frequency Setup, press 

To bypass the Frequency Setup and continue to the next Setup Menu item press 

Frequency Setup:

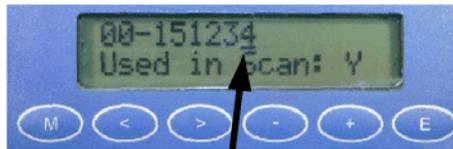
The cursor will begin on a single frequency channel for editing. Using the < and > keys will loop the cursor through the channel number, the frequency editing, and to set the “Used in Scan” setting (to set if the channel will be used in a scan when the Channel Scan feature is turned ON). Pressing “E” will save all values viewed in the screen for the current channel and advance to the next channel number for editing. The channel numbers will loop from the end of the list to the start of the list if at the end. If the “E” key is not pressed before a channel number is changed manually in the channel number position, any frequency changes made will not be saved. When all channels have been edited and saved, press the “M” key to exit the Frequency Setup and continue to the next Setup Menu item.

To change the channel number to edit, use the + or – keys to change the channel number. To get to larger channel numbers more quickly, the 10’s digit can be increased or decreased. Also, holding the + or - keys in will automatically increase or decrease the numbers until the key is released.



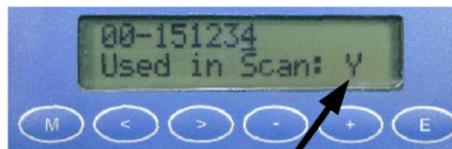
Use the  or  keys to change the channel number to be edited

When at the desired channel number, use the < or > keys to move the cursor to the frequency position to be changed. Use the + or – keys to change the numeric value.



Use the  or  keys to move the cursor to the frequency position. Then change the frequency using the  or  keys.

To select if a channel will be used or not used in a scan using the Channel Scan feature, use the < or > keys to move the cursor to the “Used in Scan” position. Select “Y” for Yes (to be used in the scan) or “N” for No (not used in the scan) by pressing the + or – key. If N was selected, the channel number will be skipped when the Channel Scan feature is turned ON.



Use the  or  keys to move the cursor to the Used in Scan position. To use the channel viewed in the screen when using the Scan feature, use the  or  keys to select “Y” for yes.



To bypass a channel in a scan when the Scan feature is turned on, change the “Used in Scan” setting to “N” by using the  or  keys

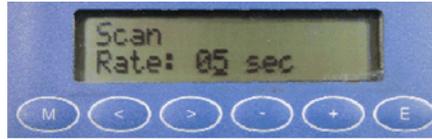
To save all values viewed for the channel number in the screen, press  before moving on to the next channel or exiting out of the Frequency Setup and advancing to the next Setup Menu item.

NOTE: No information will be saved for the current channel in the screen if “E” has not been pressed to save the changes. Only the previous frequency values will remain in memory.

When finished editing the channel frequency list and all needed changes have been saved, press  to escape out of the Frequency Setup and advance to the next Setup Menu item.

3) Scan Rate:

Use the + or – keys to change the numeric value to change the scan rate. The Scan Rate range is 1 second to 60 seconds. The 10's digit can be changed by using the < key to move the cursor to the 10's digit. When the Channel Scan feature is turned ON, the channels will scan the entered channels at the rate entered. The Channels can be manually changed using the + or – keys when the Channel Scan is turned ON.



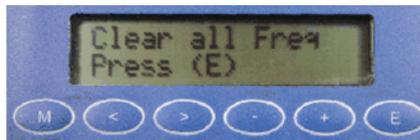
Use the  or  keys to change the Scan Rate.

Press  to save changes and move to the next Setup Menu item.

4) Clear all Frequencies?

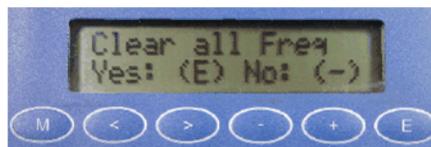
To clear all frequencies in the channel list, press “E”. A second window will appear to make sure all frequencies are to be cleared. When all frequencies are cleared, they will all be changed to the lowest frequency of the receiver and the screen will then change to the Main Menu.

To maintain the existing frequencies in memory and return to the Main Menu, press “M”.



If all frequencies are not to be cleared, press the  key to return to the Main Menu screen.

To clear all frequency to the lowest frequency of the receiver press .



If “E” was pressed to clear all frequencies, a second chance screen will appear to make sure the frequencies are to be cleared.

Press the  key to clear all frequencies to the lowest frequency of the receiver and then return to the Main Menu screen, or press the  key if all frequencies are not to be cleared and then return to the Main menu screen.

5) Turning ON or OFF the Gain Reset feature:

Use the + or - keys to turn ON or OFF the Gain Reset feature.

With the Gain Reset feature set for ON, the gain level will automatically go to the maximum gain level whenever the channel is changed.

With the Gain Reset feature set to OFF, the gain level will stay at the level it was last changed to and will stay at that level on all channels until the receiver is turned OFF.

When the receiver is turned ON, the gain setting will be at the maximum gain level in both settings.

To save any changes and return to the Main Menu, press "M".



Press the  or  keys to change the RF Gain Level as ON or OFF.

Then press the  key to return to the Main menu screen.