

# H-ITT RFbase, model number RX4000 instruction manual

## GENERAL:

The RFbase communicates with all H-ITT RF clickers. The H-ITT acquisition program, version 1.9.1 or higher must be installed on your PC to use the RX4000. There is no limit to the number of RF clickers that can be used with the RFbase. The RFbase has 62 RF channels that can be selected and are provided so that a classroom may have a unique RF channel to avoid interference between another device in or about the classroom. The RFbase is initially set to channel 7 to operate with H-ITT RF clickers that are also initially set to channel 7. It is recommended that the RF channel only be changed when other devices are being affected. Adjacent classroom interference from another H-ITT RF CRS can be eliminated by selecting the “accept only remote ID’s in the class roster” option in the H-ITT acquisition program. Keeping the default RF channel setting and limiting the accepted responses to the class roster in the acquisition software is recommended so students do not need to log in to a different channel when entering the class.

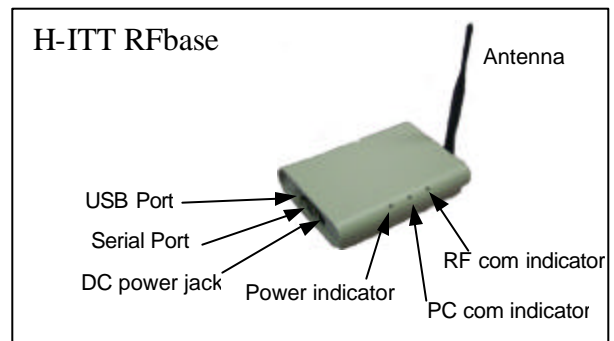
The Rfbase has selectable baud rates for communication to your PC. The default setting is 19.2K baud. Higher Baud rates are available, but not recommended and should only be used in very large roster counts i.e. 1000 students or more. If higher baud rates are selected, the length of the USB cable must not exceed 6 feet or a serial CAT5 cable length of 25 feet or less must be used.

## INITIAL SET-UP:

The RX4000 provides both USB and Serial communications ports. Connect either of these ports to your classroom PC (do not connect both). The USB connection provides power to the unit, so this is the only connection needed. You may need to install a driver for the USB port in your PC to communicate with the acquisition program (reference APPENDIX A for more information). The Rfbase should power up as indicated below with or without the proper driver. If the serial port is used, the unit must have an external power supply connected, use H-ITT part number #AC-9VDC-US or AC-9VDC-INT for international power outlets.

Power up the Rfbase by connecting the USB cable to a PC (that is powered up) or connect the external power supply H-ITT to the DC power jack. The YELLOW indicator light will turn on and both the PC com and RF com indicators will blink 4 times. If the RF com indicator blinks more than 4 times, and at a rapid rate, this can indicate that the RF channel selected may have another fixed frequency transmitter operating on the same channel within the range of the base. If this occurs, it is recommended that a different channel be selected.

Once powered up, press a button (A/1 through J/0) on an RF clicker and notice the GREEN and RED lights blink. This indicates the Rfbase is up and running and ready to operate.



## CHANGING THE RF CHANNEL:

First, remove all com and power connections, then remove the snap on cover to access the RF channel selector switch. To remove the cover, squeeze the bottom sides near the ends, and lift the top cover, it will un-snap. With the cover removed, Figure 1 shows the internal location of the 10-position DIP switch used for set up. Switch positions 1 through 6 set the RF channel. Table 1 shows the numeric value of the 62 selectable channels. The switch setting of all on or all off should not be used.

In order for the students' clickers to operate on the same RF channel as the RFbase, the selected RF channel must be published, or otherwise be made known to the students in the classroom where the H-ITT CRS is being used. A description of Student “log-in” for the classroom RF channel is provided in the clickers users guide and also in appendix B herein.

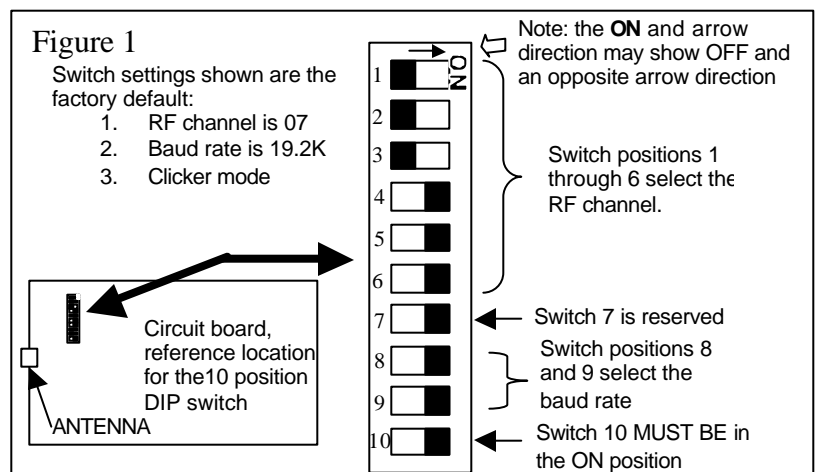


TABLE 1, SWITCH SETTINGS and resulting CHANNEL NUMBER

SWITCH SETTING							SWITCH SETTING						
Channel	#6	#5	#4	#3	#2	#1	Channel	#6	#5	#4	#3	#2	#1
01	ON	ON	ON	ON	ON	OFF	33	OFF	ON	ON	ON	ON	OFF
02	ON	ON	ON	ON	OFF	ON	34	OFF	ON	ON	ON	OFF	ON
03	ON	ON	ON	ON	ON	OFF	35	OFF	ON	ON	ON	OFF	OFF
04	ON	ON	ON	OFF	ON	ON	36	OFF	ON	ON	OFF	ON	ON
05	ON	ON	ON	OFF	ON	OFF	37	OFF	ON	ON	OFF	ON	OFF
06	ON	ON	ON	ON	OFF	OFF	38	OFF	ON	ON	OFF	OFF	ON
07	ON	ON	ON	OFF	OFF	OFF	39	OFF	ON	ON	OFF	OFF	OFF
08	ON	ON	OFF	ON	ON	ON	40	OFF	ON	OFF	ON	ON	ON
09	ON	ON	OFF	ON	ON	OFF	41	OFF	ON	OFF	ON	ON	OFF
10	ON	ON	OFF	ON	OFF	ON	42	OFF	ON	OFF	ON	OFF	ON
11	ON	ON	OFF	ON	OFF	OFF	43	OFF	ON	OFF	ON	OFF	OFF
12	ON	ON	OFF	OFF	ON	ON	44	OFF	ON	OFF	OFF	ON	ON
13	ON	ON	OFF	OFF	ON	OFF	45	OFF	ON	OFF	OFF	ON	OFF
14	ON	ON	OFF	OFF	OFF	ON	46	OFF	ON	OFF	OFF	OFF	ON
15	ON	ON	OFF	OFF	OFF	OFF	47	OFF	ON	OFF	OFF	OFF	OFF
16	ON	OFF	ON	ON	ON	ON	48	OFF	OFF	ON	ON	ON	ON
17	ON	OFF	ON	ON	ON	OFF	49	OFF	OFF	ON	ON	ON	OFF
18	ON	OFF	ON	ON	OFF	ON	50	OFF	OFF	ON	ON	OFF	ON
19	ON	OFF	ON	ON	OFF	OFF	51	OFF	OFF	ON	ON	OFF	OFF
20	ON	OFF	ON	OFF	ON	ON	52	OFF	OFF	ON	OFF	ON	ON
21	ON	OFF	ON	OFF	ON	OFF	53	OFF	OFF	ON	OFF	ON	OFF
22	ON	OFF	ON	OFF	OFF	ON	54	OFF	OFF	ON	OFF	OFF	ON
23	ON	OFF	ON	OFF	OFF	OFF	55	OFF	OFF	ON	OFF	OFF	OFF
24	ON	OFF	OFF	ON	ON	ON	56	OFF	OFF	OFF	ON	ON	ON
25	ON	OFF	OFF	ON	ON	OFF	57	OFF	OFF	OFF	ON	ON	OFF
26	ON	OFF	OFF	ON	OFF	ON	58	OFF	OFF	OFF	ON	OFF	ON
27	ON	OFF	OFF	ON	OFF	OFF	59	OFF	OFF	OFF	ON	OFF	OFF
28	ON	OFF	OFF	OFF	ON	ON	60	OFF	OFF	OFF	OFF	ON	ON
29	ON	OFF	OFF	OFF	ON	OFF	61	OFF	OFF	OFF	OFF	ON	OFF
30	ON	OFF	OFF	OFF	OFF	ON	62	OFF	OFF	OFF	OFF	OFF	ON
31	ON	OFF	OFF	OFF	OFF	OFF							
32	OFF	ON	ON	ON	ON	ON							

### SETTING THE BAUD RATE:

The DIP switch positions 8 and 9 are used to set the baud rate of the RX4000. Reference figure 1 to locate the DIP switch, and table 2 for setting the desired baud rate.

Table 2, SWITCH SETTINGS and resulting BAUD RATES.

BAUD RATE	DIP SWITCH	
	9	8
19.2K	ON	ON
38.4K	ON	OFF
57.6K	OFF	ON
115.2K	OFF	OFF

### MOUNTING THE RFBASE.

Before mounting the unit, connect the antenna to the screw-on SMA connector on the end of the unit.

1. Screw antenna onto antenna jack on base unit: **DO NOT TIGHTEN ANTENNA.**
2. Adjust antenna to desired position.
3. While holding antenna in desired position, tighten knurled section: **DO NOT OVER-TIGHTEN.**
4. If antenna needs re-adjustment, loosen knurled section, adjust as needed and re-tighten knurled section: **DO NOT ADJUST ANTENNA WITH KNURLED SECTION TIGHTENED.**

The unit can be simply set on a table top, or permanently mounted to a wall using the swivel mount supplied which screws into the threaded mounting hole on the back of the RX4000. Position the antenna based on how the unit is going to be mounted. Tests show the range is better when the unit is wall mounted with the antenna pointing up.

For best performance:

1. The antenna should be vertical, or pointing up.
2. Avoid setting the unit on a metal table.
3. Mount the unit so it has a clear line-of-sight to the seats in the classroom.

## APPENDIX A USB driver installation

USB driver installation varies depending on the operating system in your PC. For Windows and Mac, you will need to have the PC connected to the Internet for driver installation. Follow the instructions below for your PC's operating system.

- Windows: Make sure computer is connected to the Internet - driver should install automatically via windows update when the RX4000 is connected to your PC via the USB cable. Follow the driver installation wizard. If you do not see the windows update pop-up, you can manually install the driver. To manually install, you need to go to FTDI's web site at [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm) and download the VCP (virtual COM port) drivers for your operating system.
- Mac: Download and install the driver from [www.h-itt.com/download.html](http://www.h-itt.com/download.html) , or visit FTDI's web site at [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm) and download the VCP (virtual COM port) drivers for your operating system.
- Linux: Driver built into OS no need to install.

## APPENDIX B Logging in a H-ITT remote RF transmitter.

Students using their H-ITT RF clickers with the RFbase must log into the RF channel that is selected on the base unit. Therefore, the channel number selected on the base must be published, or otherwise be known to students logging in.

To log a remote in:

1. Press and hold the down arrow key until the LED turns from GREEN to RED (about 3 seconds).
2. Enter the 2-digit channel number; the LED blinks GREEN with each key press. (Valid channel numbers are 01 through 62)
3. Press the down arrow again. If the channel was entered correctly, the LED will fast blink GREEN after a few seconds. If the channel number entered was not the correct number, the LED will fast blink RED after a few seconds.

NOTES: If an invalid number was entered, the LED will immediately fast blink red when the down arrow is pressed. If a valid number is entered, after the down arrow is pressed, the RED LED will slow blink until it either acquires the RFbase (in which case it will fast blink green) OR time out after about 7 seconds then fast blink RED.

## APPENDIX C Product Specifications

Length	7.07" (179.6mm)
Width	4.92" (125.0mm)
Height	1.40" (35.6mm)
Weight	9.3 oz. (263 grams)
USB Port	USB-B
Serial Port	DB9
Serial baud rate	Selectable, 19.2K, 39.4K, 57.6K, 115.2K
DC Jack	2.1mm post DC jack, center positive
DC power	USB power or 7 to 15VDC, 500mA.
RF carrier	2.4Ghz ISM band
RF channels	62
RF data	2Mbit, NRZ format
RF Range	200 feet typical with H-ITT RF clickers
FCC ID	UH9RX4000

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**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.**

**THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.**

## APPENDIX D                      Trouble shooting and FAQ's.

We have found that most installation and start up problems can be solved by reviewing FAQ's published at <http://www.h-itt.com> or contacting H-ITT technical assistance via e-mail at [support@h-itt.com](mailto:support@h-itt.com). Below are some common basic problems and solutions for reference.

Q: I do not get *any* lights when I plug in the cable?

A: There are two sources of power for the unit. One is the USB connection. If you are using a USB cable, make sure the connections to the PC and to the unit are secure, and the PC is turned on. If there is still no power up, make sure the cable and USB port are OK by connecting a known good device with that cable to that port. If the USB port and cable are verified good, then it may be a damaged unit and must be returned for service. If you are using a serial cable, you must also have a power supply connected to the unit. The power supply (H-ITT part AC-9VDC-US) should be plugged into a known good standard 120V household outlet and firmly connected to the the DC jack on the end of the unit. First, make sure the 120V outlet is operational by plugging in a lamp or other standard AC appliance. Occasionally the DC plug may have a film that could inhibit a good connection. Twist the plug in the jack, and see if the lights turn on or flicker. If so, you can easily clean the plug with a pencil eraser to remove any film on it. The unit should power up with DC power connected, even when the serial port is not connected. The power supply can be tested if you have a voltmeter: the center should have 10 to 15 volts referenced to the outer metal plug part which is ground. If the power supply is not faulty, and the unit still will not power up, it may be damaged and may require return for service.

Q: Power up seems OK, but clickers do not work and students can not log in?

A: Verify that that switch position 10 is in the ON position, if not, power the RX4000 down (un-plug it) and change switch position 10 to ON and power up, try clicker again. If still no response, verify RF channel setting. If a clicker is set to the correct channel, pressing any button (except the down button) on the clicker will make the RF and PC indicators blink. If you get this blink, make sure that the H-ITT acquisition program, version 1.9.1 or higher is installed on your PC and the baud rate selected in the program matches the baud rate set on the unit. If the RF com and PC com lights on the base do not blink when an RF clicker button is pressed, verify the following 3 conditions are met:

1. Make sure the RF channel is set correctly to the channel number the students are logging on to.
2. The unit must be powered up (i.e. the yellow indicator is on)
3. The unit and clicker (with fresh batteries) are within range: 200 feet or less.

If you have not changed the RF channel it should still be set to 07, so try a RF clicker and log in on channel 07. If you have changed the DIP switch settings, double check the published channel number, and make sure switch 10 is in the ON position. If you still have problems the unit may be damaged and require return.

Q: Students can log in, they get the green blinking light, but the PC will not accept them.

A: When a clicker button is pressed (except for the down button) the Rfbase lights RF and PC com should blink. If these indicators blink, then the the problem is most likely with the PC connection, or software set up. If only one of the com indicator lights blink, this may indicate a damaged unit, which may require service return. If both com indicators blink, make sure H-ITT acquisition program version 1.9.1 or greater is installed in the PC, all cable connections are secure and unit type and baud rate are selected correctly in the acquisition program. Make sure the USB driver is properly installed on your PC (if USB connected).

Additional information regarding installation, applications and software can be found at <http://www.h-itt.com>. You can e-mail [support@h-itt.com](mailto:support@h-itt.com) for technical assistance with any problems installing or using your H-ITT product.