

# H-ITT RFbase, model number 4000 instruction manual

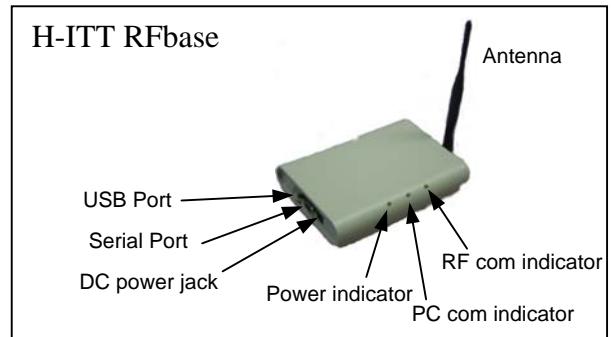
## GENERAL:

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. There is no limit to the number of RF clickers (or RF links) that can be used with a single RFbase. The RFbase has 62 RF channels that can be selected, and has 4 selectable baud rates. The 62 RF channels are provided so that a classroom can have its unique RF channel so as not to interfere with adjacent classrooms, or other fixed frequency devices already installed in the classroom.

## INITIAL SET-UP:

The unit 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. If the serial port is used, the unit must have an external power supply connected, use H-ITT part number #2003.

On power up, 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 at a faster rate than the 4 initial blinks, 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. Additionally, the RF channel should be selected based on a cooperative effort with nearby classrooms so that each classroom within about 500 feet operates the H-ITT CRS on a unique RF channel selection.



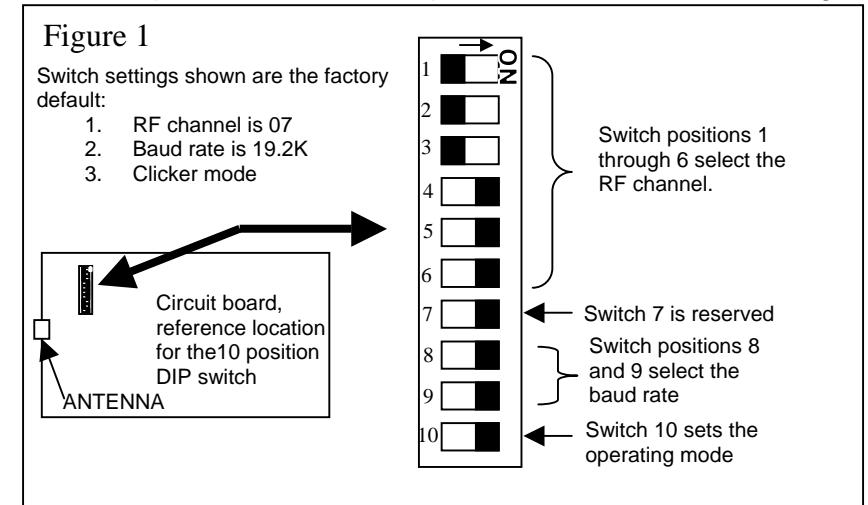
## CHANGING THE RF CHANNEL:

The RFbase snap on cover must be removed 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. In general, the 6 switches represent a 6 bit binary number.

To decode this binary number, switch 1 is the LSB and switch 6 is the MSB. When the switch is ON the binary value is zero, and when the switch is OFF the binary value is one. The switch setting of 00 (all on) and 11 (all off) should not be used.

In order for the student's 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 A herein.

# PRELIMINARY

TABLE 1, SWITCH SETTINGS and resulting CHANNEL NUMBER

Channel	SWITCH SETTING					
	#6	#5	#4	#3	#2	#1
01	ON	ON	ON	ON	ON	OFF
02	ON	ON	ON	ON	OFF	ON
03	ON	ON	ON	ON	OFF	OFF
04	ON	ON	ON	OFF	ON	ON
05	ON	ON	ON	OFF	ON	OFF
06	ON	ON	ON	OFF	OFF	ON
07	ON	ON	ON	OFF	OFF	OFF
08	ON	ON	OFF	ON	ON	ON
09	ON	ON	OFF	ON	ON	OFF
10	ON	ON	OFF	ON	OFF	ON
11	ON	ON	OFF	ON	OFF	OFF
12	ON	ON	OFF	OFF	ON	ON
13	ON	ON	OFF	OFF	ON	OFF
14	ON	ON	OFF	OFF	OFF	ON
15	ON	ON	OFF	OFF	OFF	OFF
16	ON	OFF	ON	ON	ON	ON
17	ON	OFF	ON	ON	ON	OFF
18	ON	OFF	ON	ON	OFF	ON
19	ON	OFF	ON	ON	OFF	OFF
20	ON	OFF	ON	OFF	ON	ON
21	ON	OFF	ON	OFF	ON	OFF
22	ON	OFF	ON	OFF	OFF	ON
23	ON	OFF	ON	OFF	OFF	OFF
24	ON	OFF	OFF	ON	ON	ON
25	ON	OFF	OFF	ON	ON	OFF
26	ON	OFF	OFF	ON	OFF	ON
27	ON	OFF	OFF	ON	OFF	OFF
28	ON	OFF	OFF	OFF	ON	ON
29	ON	OFF	OFF	OFF	ON	OFF
30	ON	OFF	OFF	OFF	OFF	ON
31	ON	OFF	OFF	OFF	OFF	OFF
32	OFF	ON	ON	ON	ON	ON

Channel	SWITCH SETTING					
	#6	#5	#4	#3	#2	#1
33	OFF	ON	ON	ON	ON	OFF
34	OFF	ON	ON	ON	OFF	ON
35	OFF	ON	ON	ON	OFF	OFF
36	OFF	ON	ON	OFF	ON	ON
37	OFF	ON	ON	OFF	ON	OFF
38	OFF	ON	ON	OFF	OFF	ON
39	OFF	ON	ON	OFF	OFF	OFF
40	OFF	ON	OFF	ON	ON	ON
41	OFF	ON	OFF	ON	ON	OFF
42	OFF	ON	OFF	ON	OFF	ON
43	OFF	ON	OFF	ON	OFF	OFF
44	OFF	ON	OFF	OFF	ON	ON
45	OFF	ON	OFF	OFF	ON	OFF
46	OFF	ON	OFF	OFF	OFF	ON
47	OFF	ON	OFF	OFF	OFF	OFF
48	OFF	OFF	ON	ON	ON	ON
49	OFF	OFF	ON	ON	ON	OFF
50	OFF	OFF	ON	ON	OFF	ON
51	OFF	OFF	ON	ON	OFF	OFF
52	OFF	OFF	ON	OFF	ON	ON
53	OFF	OFF	ON	OFF	ON	OFF
54	OFF	OFF	ON	OFF	OFF	ON
55	OFF	OFF	ON	OFF	OFF	OFF
56	OFF	OFF	OFF	ON	ON	ON
57	OFF	OFF	OFF	ON	ON	OFF
58	OFF	OFF	OFF	ON	OFF	ON
59	OFF	OFF	OFF	ON	OFF	OFF
60	OFF	OFF	OFF	OFF	ON	ON
61	OFF	OFF	OFF	OFF	ON	OFF
62	OFF	OFF	OFF	OFF	OFF	ON

## SETTING THE BAUD RATE:

The DIP switch positions 8 and 9 are used to set the baud rate of the RFbase. 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.

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

## OPERATING MODE:

The RFbase has 2 operating modes:

1. Operating with H-ITT RF clickers.
2. Not used currently.

DIP switch position10 is used to select the desired mode:

ON is the RF clicker mode.

The RFbase is factory set for operation with the H-ITT RF clickers. All above instructions apply when used for a H-ITT full RF based CRS.

## MOUNTING THE RFBASE.

Before mounting the unit, connect the antenna to the screw on SMA connector on the end of the unit. The unit can be simply set on a table top, or mounted to a wall using the "key-hole" on the back of the unit to hang it. Position the antenna based on how the units 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.

**PRELIMINARY**

## APPENDIX A

### 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.

# PRELIMINARY

## APPENDIX B

### 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

FCC ID: UH9RX4000

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 C

## 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 #2003) 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. Ocassionally 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: Students can not log in?

A: 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 you do not get the blink lights on the base 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 unit's RF and PC com lights 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.

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.

# PRELIMINARY