# Wireless Remote Sensor
Models RS200Tx, RS250Tx, RS200Rx, RS250Rx
Preliminary

The Wireless Remote Sensor is made up of two components: the Receiver and Transmitting Sensor. Up to 16, (# 0 - 15), Transmitting Sensors units may be used with one Receiver. The Receiver averages all signals received and reports the averaged temperature to the thermostat. The Receiver will only 'listen' to Transmitting Remote Sensors with the same HOUSE CODE as the Receiver's HOUSE CODE.
If more than one Transmitting Remote Sensor is used with only one Receiver, then all of the Transmitting Remote Sensors MUST have the same HOUSE CODE, but each Transmitting Remote Sensor must have a different UNIT ID CODE. Up to 4 Transmitting Remote Sensors May be used with one Receiver, (# 0 - 3).

The Transmitting Remote Sensor transmits the temperature to the Receiver in one of four selectable time intervals. They are: every 5 seconds, every 2 minutes, every 5 minutes, or every 10 minutes. The suggested settings are as follows: 5 seconds only for installation and set up, 2 minute for indoor remote sensor application where fast response is needed, 5 minute for Indoor remote sensor where fast response is not needed and 10 minute for outdoor temperature sensing.

The Receiver has 4 LEDs. The LEDs correspond to UNIT CODES # 0 - 3. When the Receiver receives a valid temperature from the Remote Sensor, the proper LED will blink and stay on until the next valid transmission. If a valid transmission is not received for 10 minutes, the LED will turn off. *Note: The Receiver can receive up to 16 different Unit Codes on the same House Code, but the LEDs will only indicate the 1st 4, (# 0 - 3). The LEDs are included, as a tool, to confirm proper reception.*
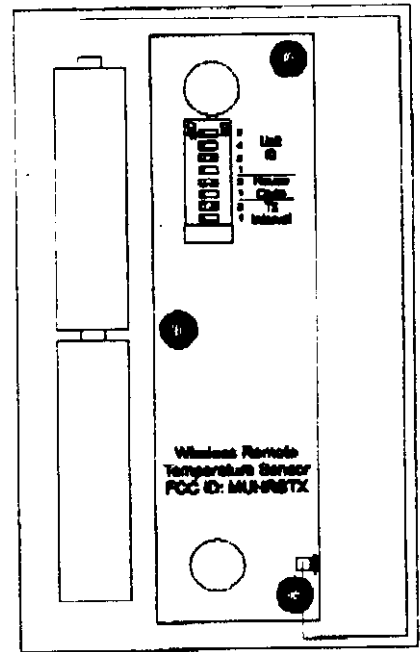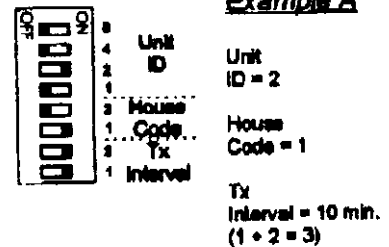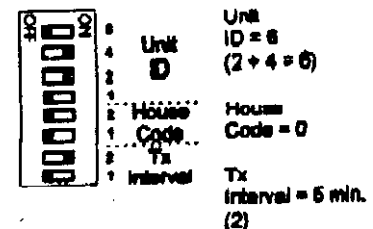

Transmitter

Transmitter Switch Settings

All switches in the Off position = 0.
Add all switches in the On position to arrive at the setting.

Transmission Interval (Tx Interval), 0 = 5 sec., 1 = 2 min., 2 = 5 min., and 3 = 10 min.
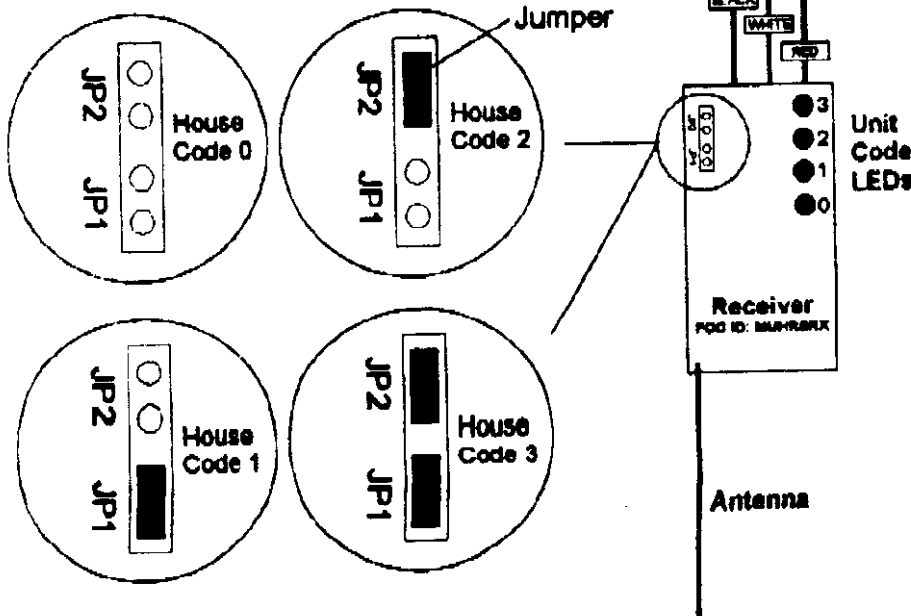
House Code Settings on the Receiver
(By Jumper Setting)

Jumper

House Code 0

House Code 2

House Code 1

House Code 3

Thermostat
RS Gnd   RS   RS +5

BLACK
WHITE
RED

Unit Code LEDs
● 3
● 2
● 1
● 0

Receiver
FCC ID: MUH-RSRX

Antenna

Example A

Unit ID

House Code

Tx Interval

Unit ID = 2

House Code = 1

Tx Interval = 10 min.
(1 + 2 = 3)

Example B

Unit ID

House Code

Tx Interval

Unit ID = 6
(2 + 4 = 6)

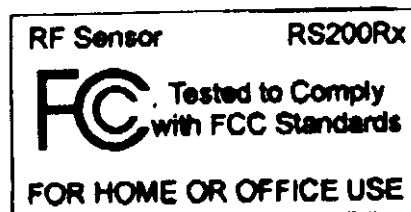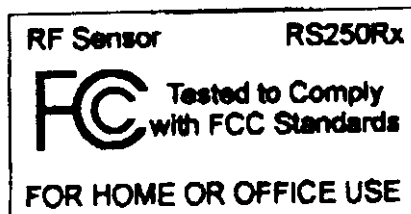House Code = 0

Tx Interval = 5 min.
(2)

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.
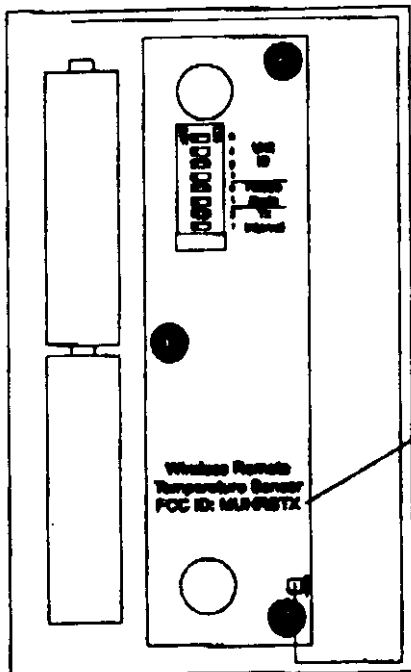
Transmitter
FCC ID
Location

Wireless Remote
Temperature Sensor
FCC ID: MUHRSTX

RF Sensor   RS250Rx

FC Tested to Comply
    with FCC Standards

FOR HOME OR OFFICE USE

RF Sensor   RS200Rx

FC Tested to Comply
    with FCC Standards

FOR HOME OR OFFICE USE

© VENSTAR, INC. 1996

RFM

HX1003

418.0 MHz Hybrid Transmitter

- *Ideal for 418 MHz Unlicensed Transmitters in the UK and USA*
- *Quartz SAW Frequency Stabilization and Harmonic Filtering*
- *Compact Surface-Mount Case with < 90 mm² Footprint*

The HX1003 is a miniature transmitter module that generates on-off keyed (OOK) modulation from an external digital encoder (not included). The carrier frequency is quartz surface acoustic wave (SAW) stabilized and output harmonics are suppressed by a SAW filter. The results are excellent performance in a simple-to-use surface-mount device with low external component count. The HX1003 is designed specifically for unlicensed remote-control and wireless security transmitters operating at 418.0 MHz in the UK under Dept. of Trade and Industry (DTI) MPT 1340 regulations and in the USA under FCC Part 15 regulations.

SM-4 Case

5

ABSOLUTE MAXIMUM RATINGS

Rating	Value	Units
Power Supply and/or Modulation Input Voltage	10	V
Non-Operating Case Temperature	-40 to +85	°C
10 second Soldering Temperature	230	

ELECTRICAL CHARACTERISTICS

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	Absolute Frequency	f_O	1, 2	417.900	—	418.100	MHz
	Relative to 418.000 MHz	Δf_O		—	—	±100	kHz
RF Output Power into 50 Ω	at 25 °C	P_O	2	-3	0	+2	dBm
	Over Temperature Range		1, 2	-5	0	+2	
Harmonic Spurious Emissions			1, 2	—	-45	-35	dBc
Modulation Input	Input HIGH Voltage	V_{IH}	1, 2	2.5	—	V_{CC}	V
	Input LOW Voltage	V_{IL}		0.0	—	0.3	
	Input HIGH Current	I_{IH}		—	—	100	µA
	Input LOW Current	I_{IL}		0.0	—	—	
Data Timing Parameters	Modulation Bandwidth		1, 2, 3	—	1	—	kHz
	Modulation Rise Time	t_r		—	—	100	µs
	Modulation Fall Time	t_f		—	—	100	
Power Supply	Voltage	V_{CC}		2.7	3	3.3	VDC
	Peak Current	I_{CC}	1, 2, 4	—	7	10	mA
	Standby Current		5	—	—	1.0	µA
Operating Case Temperature Range		T_C		-40	—	+85	°C

Lid Symbolization (in addition to date and/or lot code)	RFM HX1003

Notes: (Case temperature = +25°C ±2°C, test load impedance = 50 Ω and modulation input is at logic HIGH unless noted otherwise.)
1. Applies over the specified range of operating temperature.
2. Applies over the specified range of operating power supply voltage.
3. The maximum modulation bandwidth (and data rate) is dependent on the characteristics of the external encoding circuitry (not included).
4. The maximum operating current occurs at the maximum specified power supply voltage and maximum specified operating temperature.
5. Standby current is defined as the supply current consumed with the modulation input at logic LOW.
6. The design, manufacturing process, and specifications of this device are subject to change without notice.
7. Manufacturers of end products utilizing this device are responsible for obtaining approval by the appropriate government regulatory agencies.
8. One or more of the following U. S. Patents apply: 4,454,488, 4,616,197, 4,670,681 and 4,760,352.
9. RFM® is a registered trademark of RF Monolithics, Inc.
10. CAUTION: ELECTROSTATIC SENSITIVE DEVICE. Observe precautions for handling.

HX1003.CHP-A-01-112194AC √HXBACK.CHP ©1994 **RF Monolithics, Inc.**