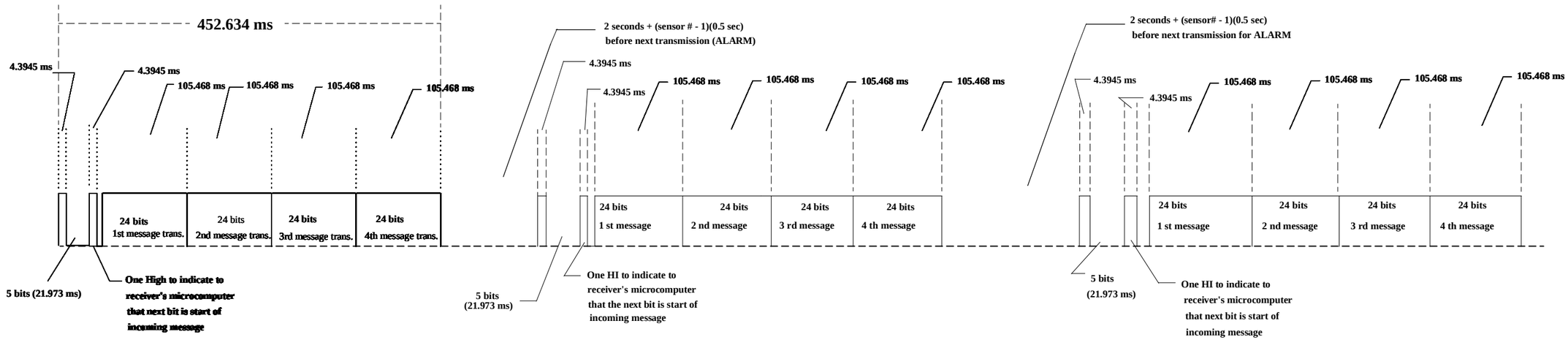


ENGINEERING NOTES

101 The crystal operates at 32.768KHz. It takes 4 clock cycles to do one normal instruction.

102 The duration of one bit is 4.39245 ms, which is derived from (1/32,768Hz)x(4 clock cycles)x(36 instructions)

103 One normal instruction takes 122 microseconds. (32,768Hz)/ (4 cycles/ inst.) =8,192 inst/sec. and (1/8192 inst/sec)= 122 microseconds/inst.
A branching inst ,like GOTO, takes two instructions cycles.

104 The transmitter uses 4 bits in the ONESEND block to tell the receiver the sum of 1's are in MESSAGEHIGH and MESSAGE LOW blocks.
The receiver counts the 1's in the messages and compares that against the ONESEND count of 1's. It ignores messages that have the wrong 1's count.
The receiver compares all 4 incoming messages in the first block of messages and looks for a match on two that are the same.

105 Only ALARM messages get sent 3 times, all other messages get sent once.
For ALARMS:
After 2 sec + (sensor # - 1)(0.5 sec) the second block of messages is sent and the receiver compares the 4 new messages for a match on two that are the same. The same thing happens on the third block of messages. The microcomputer takes action on each block of messages after the compare is made.

106 When a repeater sees a 418MHz transmission, it takes the message in, adds 1 to the ONESEND count, adds a HI bit to the 4th bit of the MESSAGEHIGH block and then transmits the full message to a receiver. Other repeaters that see the transmission do not repeat it because they test the 4th bit of MESSAGEHIGH and realize that it is a repeater's transmission.

107 Sensors check-in every 9 hours plus a number of random minutes, up to 120 minutes. Consequently, sensors do NOT make periodic transmissions at predetermined intervals to receivers, the transmissions are ALWAYS randomized and all sensors use different random numbers to determine when to transmit for supervisory purposes.

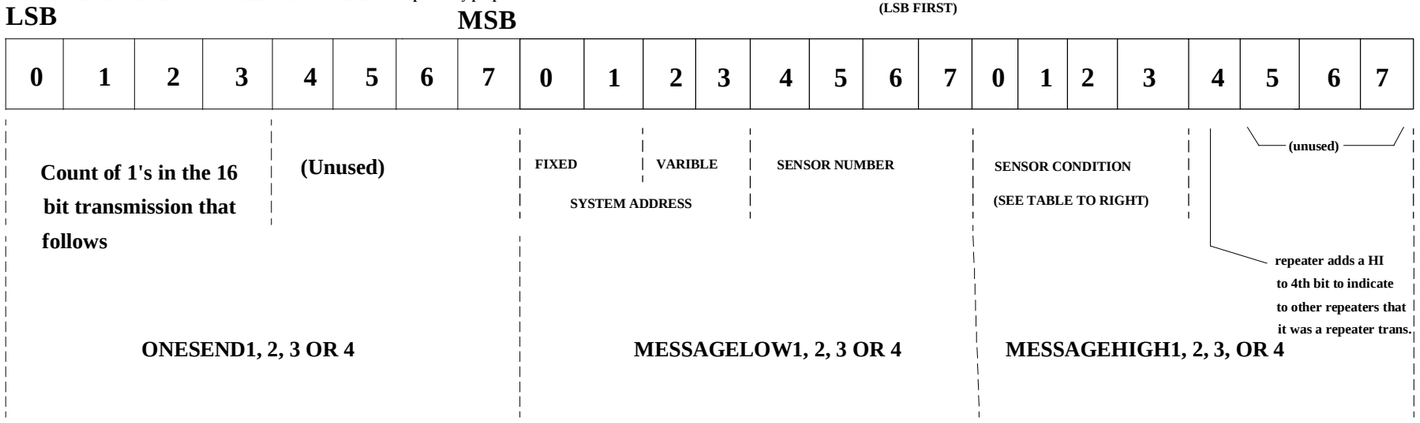
Sensor Condition

Decimal Value	MESSAGEHIGH Bit 0	1	2	3	
	0	0	0	0	(NOT USED)
1	1	1	1	0	WARNING MESSAGE FROM TEMP. SENSOR
2	0	1	0	0	SENSOR TESTS GOOD
3	1	1	0	0	CIRCUIT TEST BAD
4	0	0	1	0	CIRCUIT TEST BAD & LOW BATTERY
5	1	0	1	0	ALARM
6	0	1	1	0	LOW BATTERY
7	1	0	0	0	TEST BUTTON ON TRANSMITTER WAS PUSHED

(NO OTHER STATUS CODES ARE USED)

DIRECTION OF TRANSMISSION

(LSB FIRST)



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Transmission Code Format

Hudson/Britton