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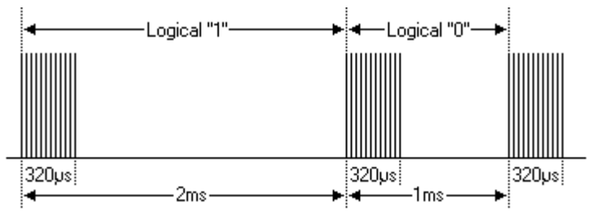
Sharp Protocol

I only have little information on this protocol. It is used in VCRs that are produced by Sharp, that is why I gave it the name Sharp protocol.

Features

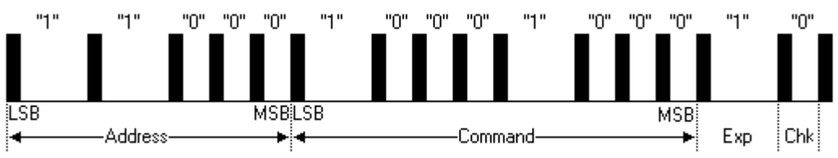
- 8 bit command, 5 bit address length
- Pulse distance modulation
- Carrier frequency of 38kHz
- Bit time of 1ms or 2ms

Modulation

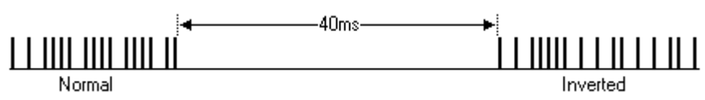


The Sharp protocol uses a pulse distance encoding of the bits. Each pulse is a 320µs long 38kHz carrier burst (about 12 cycles). A logical "1" takes 2ms to transmit, while a logical "0" is only 1ms. The recommended carrier duty-cycle is 1/4 or 1/3.

Protocol



In the picture above you see a typical pulse train sending the command $11 and address $03. The Address is sent first and consists of 5 bits. Next comes the 8 bit command. In both cases the LSB of the data is sent first.
I don't exactly know the purpose of the Expansion and Check bits that follow the command. Both bits were fixed in the example that I had at hand.
I can only guess that the Check bit is used to find out whether we are receiving a normal or inverted message.



One complete command sequence consist of 2 messages. The first transmission is exactly as described above. The second transmission follows the first one after a delay of 40ms, and basically contains the same information. The only difference is that all bits, except those from the address field, are inverted. This way the receiver can verify if the received message is reliable or not.

Last Updated: 10 - April - 2006