Knowledge Base

Navigation

Home
Knowledge Base

IR RC Theory
ITT Protocol
JVC Protocol
NEC Protocol
Nokia NRC17
Sharp Protocol
Sony SIRC
Philips RC-5
Philips RC-6
Philips RC-MM
Philips RECS80
X-Sat
Other Protocols

Universal Controllers

X-Sat Protocol

I call this the X-Sat protocol because it is used in the X-Sat CDTV 310 Satellite receiver made by the French company Xcom. This protocol is probably also used in other X-Sat receivers, but I have no means to verify that. I haven't seen this protocol anywhere else but that doesn't guarantee that it is unique to the X-Sat brand.

Features

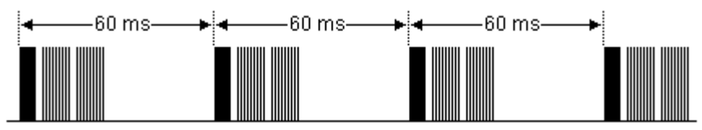
- 8 bit address and 8 bit command length
- Pulse distance modulation
- Carrier frequency of 38kHz
- Bit time of 1ms or 2ms

Modulation

The X-Sat protocol uses pulse distance encoding of the bits. Each pulse is a 526µs long 38kHz carrier burst (about 20 cycles). A logical "1" takes 2.0ms to transmit, while a logical "0" is only 1.0ms. The recommended carrier duty cycle is 1/4 or 1/3.

Protocol

The picture above shows a typical pulse train of the X-Sat protocol. With this protocol the LSB is transmitted first. In this case Address $59 and Command $35 is transmitted. A message is started by a 8ms AGC burst, which was used to set the gain of the earlier IR receivers. This AGC burst is then followed by a 4ms space, which is then followed by the Address and Command. A peculiar property of the X-Sat protocol is the 4ms gap between the address and the command. The total transmission time is variable because the bit times are variable.



An IR command is repeated 60ms for as long as the key on the remote is held down.

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