D60
REMOTE CONTROL SPECIFICATIONS

Document Revision 1.0 (18 September 2008)

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Revision History:

Revision	Date	Description of Change
1.0	18 September 2008	Initial version.

1. Introduction

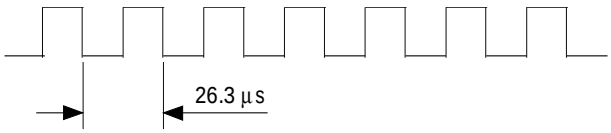
This document describes the SIM2 D60 IR Remote Control signal protocol.

2. Protocol

Signal

The IR signal is output using Pulse Duration Modulation.

The Pulse Carrier Frequency is 38 kHz.



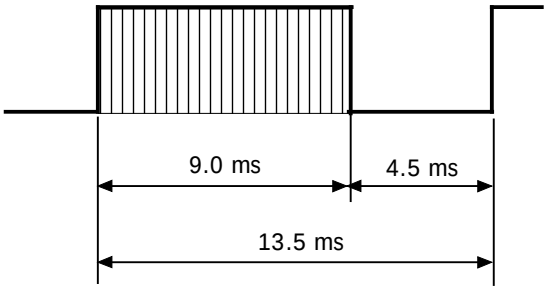
The wave form of the signal the Remote Control Unit outputs is made of 3 different pulses:

- Start Pulse
- 'Bit 0' Pulse
- 'Bit 1' Pulse.

They consists of carrier bursts of different length. Combining these elementary signals, different wave forms are emitted by the Remote Control for each key.

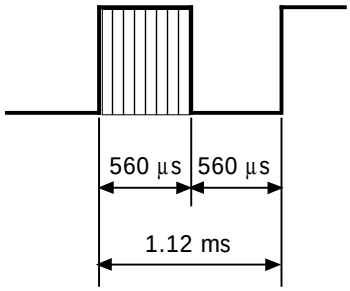
Start Pulse

The Start Pulse consists of is a 9.0 ms long carrier burst, followed by a 4.5 ms long idle time.
Its overall length is T_s= 13.5 ms.



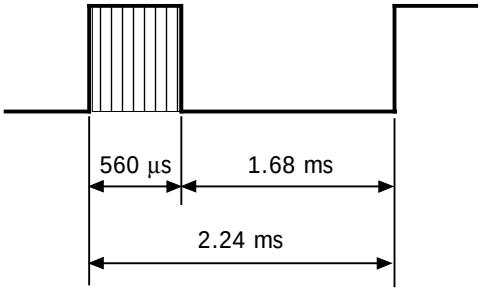
'Bit 0' Pulse

Bit 0 is represented by a 560 µs long carrier burst, followed by a 560 µs long idle time (T_0 = 1.12 ms).



'Bit 1' Pulse

Bit 1 is represented by a 560 µs long carrier burst, followed by a 1.68 ms long idle time (T_1 = 2.24 ms).



Codes

The packet for Remote Control keys consists of a Start Code, a Custom Code and a Data Code.

The Start Code is fixed, while Custom and Data codes are encoded on 8 bits, with LSB sent first, as in the following figure.

Start Code	Custom Code								Data Code							
	C0	C1	C2	C3	C4	C5	C6	C7	D0	D1	D2	D3	D4	D5	D6	D7
	LSB							MSB	LSB							MSB

Start Code

Start code is fixed and corresponds to the Start Pulse described above.
Therefore, each Command must begin with this pulse.

Custom Code

Custom Code is encoded on 8 bits, with LSB sent first.
Each bit corresponds either to the 'Bit 0' Pulse or to the 'Bit 1' Pulse described above.

SIM2 D60 Custom code is the following:

Code	
Hex	**Dec**
30	48

Data Code

Data Code is encoded on 8 bits, with LSB sent first.
Each bit corresponds either to the 'Bit 0' Pulse or to the 'Bit 1' Pulse described above.

Data Codes are listed in the tables below.

There are two types of Data Codes.

- Key Codes are in one-to-one correspondence to Remote Control keys.
- Virtual Codes are additional codes that do not correspond to any Remote Control key.
  They may be implemented in Programmable Remote Controls and Home Automation Devices.

D60: Key Codes		
Key	**Code**	
	Hex	**Dec**
POWER	02	2
COMP1	51	81
COMP2	50	80
VIDEO	52	82
HDMI 1/2	58	88
RGB HD	41	65
S-VIDEO	1F	31
ANA	70	112
4:3	71	113
LB	72	114
WIDE	73	115
REAL	74	116
PRESET	10	16
USER1	75	117
USER2 / ISF NIGHT	76	118
USER3 / ISF DAY	77	119
DEFAULT	78	120

UP	0B	11
LEFT	0D	13
ENTER	15	21
RIGHT	0E	14
DOWN	0C	12
MENU	0F	15
EXIT	85	133
BRIGHTNESS	16	22
CONTRAST	11	17
COLOR	79	121
TINT	7A	122
PIP	1B	27
SIZE	90	144
POSITION	91	145
ACTIVE	7B	123
IRIS	7C	124
LENS	8A	138

D60: Virtual Codes		
Function	**Code**	
	Hex	**Dec**
POWER OFF	4E	78

3. Examples

ARROW RIGHT code hexadecimal value is 0E = 00001110. This is the Data Code.
Custom Code is fixed at 30(hexadecimal). As 30 = 00110000, the packet is the following:

Start Code	**Custom Code**								**Data Code**							
	0	0	0	0	1	1	0	0	0	1	1	1	0	0	0	0
	LSB							MSB	LSB							MSB