

**PRODUCT
SPECIFICATIONS**

**RCV-3000 STANDARD
IR/USB RECEIVER**

OCTOBER 22, 2018

Celadon Part Number: FGSCRCV3000-01



**Celadon Incorporated
58 Paul Drive, Suite D, San Rafael, CA 94903**

1. GENERAL

1.1 System: Infrared Receiver System (Pulse Position Modulation [PPM])

based on an 8-bit microcontroller.

IR Protocols Supported: NEC, RC-5, SonyD7C5, Toshiba, Mitsubishi, Matsushita, BW7070 Remote Control.

Components Used: Refer to Bill of Materials

Cable Connector: USB A type

Output Format: ASCII

Data Format: 9600 bps, 8, N, 1

Power Source: DC5V (From USB Port)

Temperature

Storage: -20°C to +50°C

Operating: -3°C to +50°C

2. MECHANICAL

2.1 Weight: 78g (includes USB cable)

2.2 Case Size & Material

- Size: 67mm(L) x 48mm(W) x 18mm(H)

- Material: PC (Dark Violet)

3. ELECTRICAL CHARACTERISTICS

3.1 Current Consumption: 10mA \pm 3mA

3.2 Operating Voltage: DC5V (From USB Port)

4. RESONATOR CHARACTERISTICS

4.1 Frequency: 4.0MHz \pm 0.5%

4.2 Temperature Drift: \pm 0.3% MAX (from initial value)

SUPPORTED IR PROTOCOLS

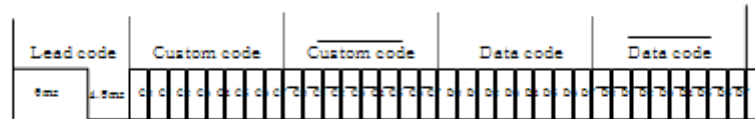
SWE	FORMAT: NEC	REV.1
	Description: uPD6121G with Single Repeat Code	Nov. 28. 2007

1. Carrier

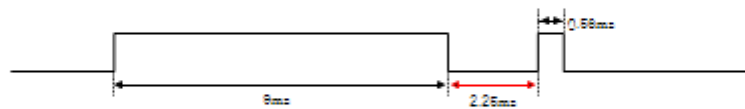


2. Configuration of Frame

- 1st frame



3. Repeat code

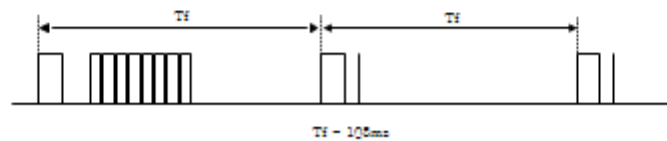


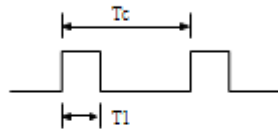
4. Bit Description



5. Frame Interval : Tf

The transmitted waveform as long as a key is depressed

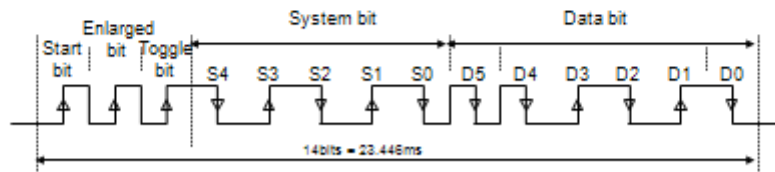


SWE**FORMAT : PHILIPS****REV.1****Description : RC5 (SAA3010)****NOV. 29. 2005**

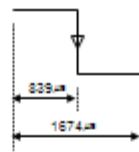
Carrier frequency = 38KHz

Duty ratio = $T_1/T_c = 1/3$ **- Configuration of Frame**

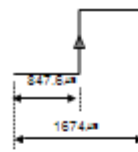
1st frame

**- Bit Description**

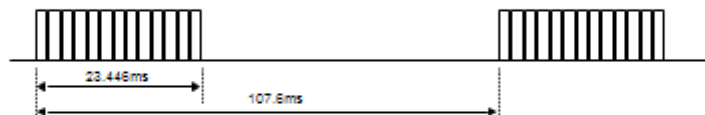
Bit '0'



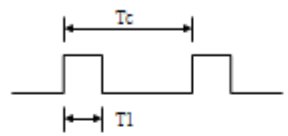
Bit '1'

**- Frame Interval : Tf**

The transmitted waveform as long as a key is depressed

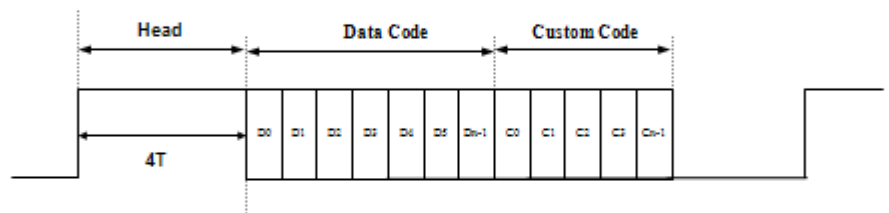


SWE	FORMAT : SONY	REV.1
	Description : SONY -D7C5	Apr. 21. 2009

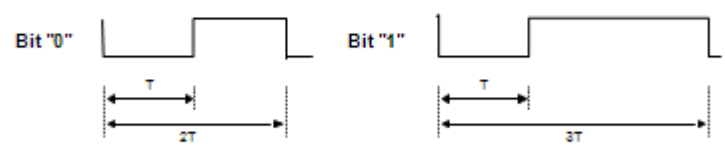


Carrier frequency = 40KHz
 Duty ratio = $T_1/T_c = 1/3$
 TIME UNIT = $T = 24T_c = T$

- Configuration of Flame

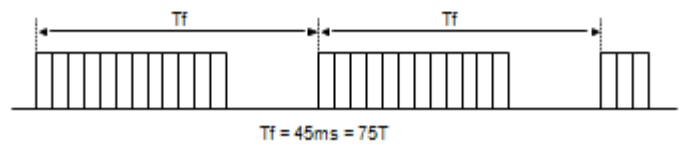


- Bit Description



- Flame Interval : T_f

The transmitted waveform as long as a key is depressed

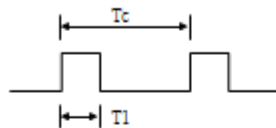


SWE**FORMAT:** TOSHIBA

REV.1

Description:TC9012 with Full Repeat Code

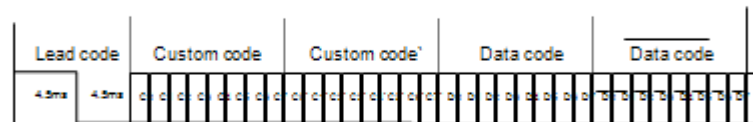
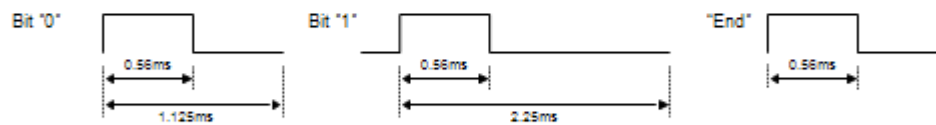
NOV.24.2005



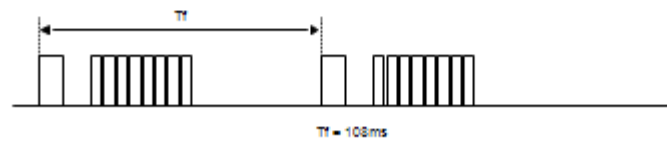
Carrier frequency = 38KHz

Duty ratio = $T1/Tc = 1/3$ **- Configuration of Flame**

1st frame

**- Bit Description****- Flame Interval : Tf**

The transmitted waveform as long as a key is depressed

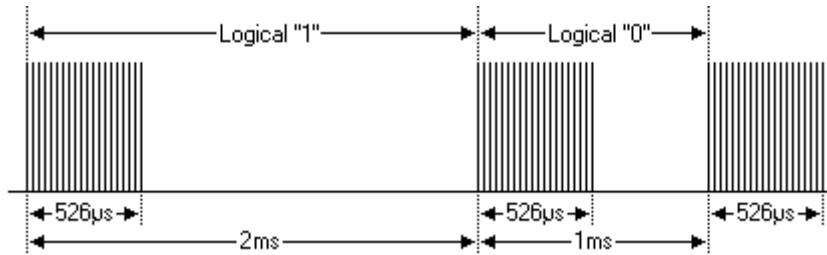


MITSUBISHI PROTOCOL

Features

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

Modulation



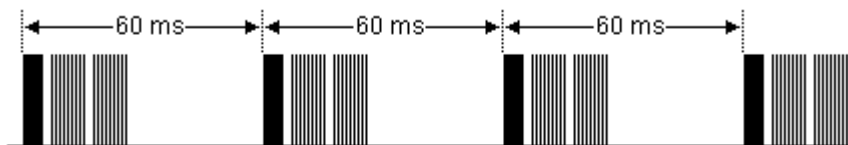
The X-Sat protocol uses pulse distance encoding of the bits. Each pulse is a 526µs long 38kHz carrier burst (about 20 cycles). A logical "1" takes

2.0ms to transmit, while a logical "0" is only 1.0ms. The recommended carrier duty cycle is 1/4 or 1/3.

Protocol

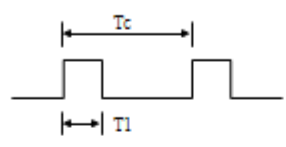


The picture above shows a typical pulse train of the X-Sat protocol. With this protocol the LSB is transmitted first. In this case Address \$59 and Command \$35 is transmitted. A message is started by an 8ms AGC burst, which was used to set the gain of the earlier IR receivers. This AGC burst is then 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.



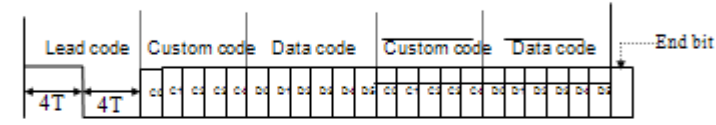
An IR command is repeated 60ms for as long as the key on the remote is held down.

SWE	FORMAT: MATSUSITA	REV.1
	Description: MN6014-C5D6	NOV.24.2005

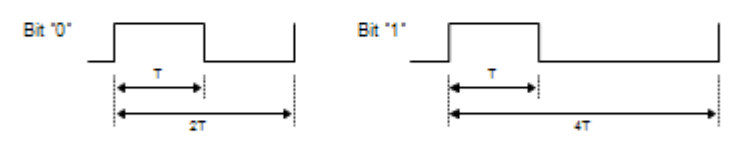


Carrier frequency = 56.8KHz
 Duty ratio = $T1/Tc = 1/3$
 Time Unit = $32Tc = T$

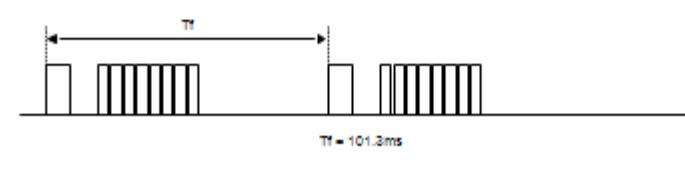
- Configuration of Flame
 1st flame



- Bit Description



- Flame Interval : Tf
 The transmitted waveform as long as a key is depressed



STANDARD CODE 7A – BW7070..

BW7070 Protocol Definition

Code Format

The Special code is specially designed to reduce the time of implementing the hardware/software systems. As shown in Figure 2, the Special code consists of a *Leader* pulse, which gives the first identification of the code and provides synchronization of data bits. This is very useful when sleep-mode provided by the decoder is used to save system power. Following the Leader pulse is the *Custom Codes* bits (C_7, C_6, \dots, C_0), where C_7 is the Most Significant Bit (MSB). There are a total of 8 *Custom Codes* bits. The next 6 bits is the *Data Codes* (D_5, D_4, \dots, D_0). Two very useful additional features are provided by the next two bits. The first is the *Toggle* bit. This bit changes state, or toggles, after each key release. This can be used to identify the initiation of a new transmission. Finally, code integrity is provided with the easy to implement *Parity* bit. In most cases, odd parity is used. The *Stop* pulse terminates the *Parity* bit.

A complete code consists of 8 *Custom Codes* bits, 6 *Data* bits, 1 *Toggle* Bit, and 1 *Stop* bit for a total of 16 bits of data (8+6+1+1). There is a gap between codes and then the entire sequence repeats again. (see Figure 1).

The data bit format is documented in Figure 3. The data bits use a PWM (Pulse Width Modulated) scheme. Each data bits starts with a pulse of 1.16 ms. The value of the data bit is determined by the width of the gap between pulses. A short gap (1.125ms) represents a zero (0) bit. Along gap (2.875ms) represents a one (1) bit.

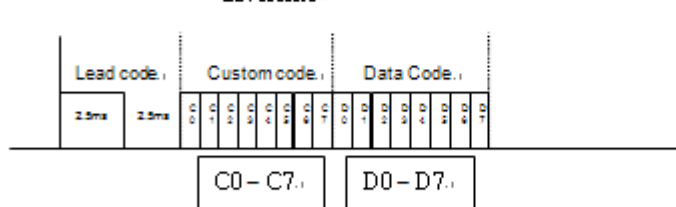
BW7070 Waveform Data

↓

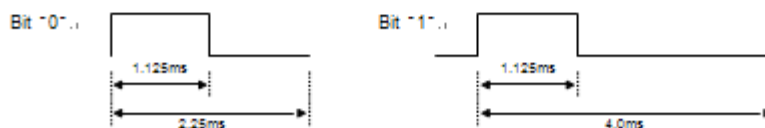


- Configuration of Frame

1st frame.



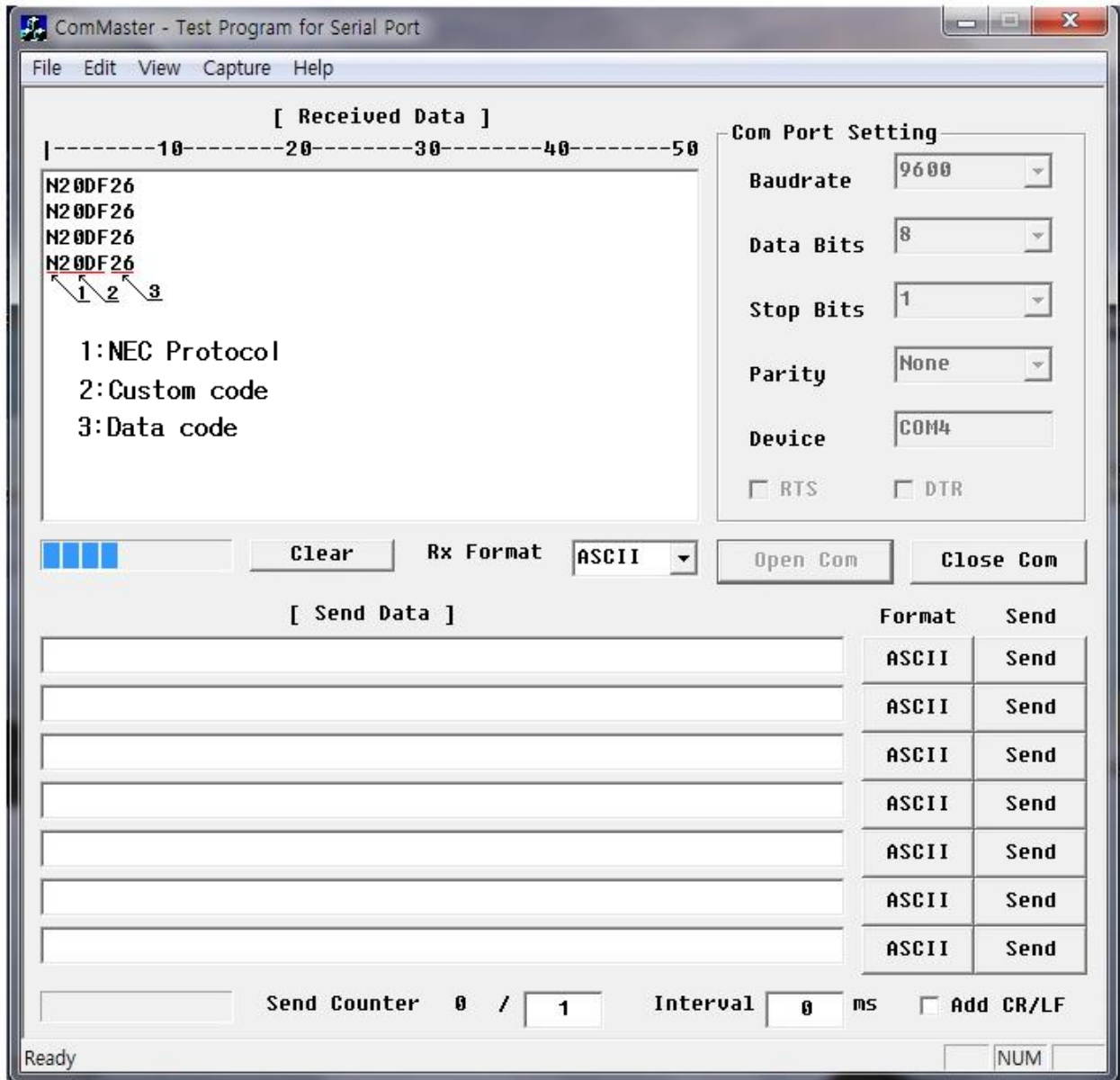
- Bit Description



- Flame Interval: Tf

The transmitted waveform as long as a key is depressed.

ASCII OUTPUT SETTINGS

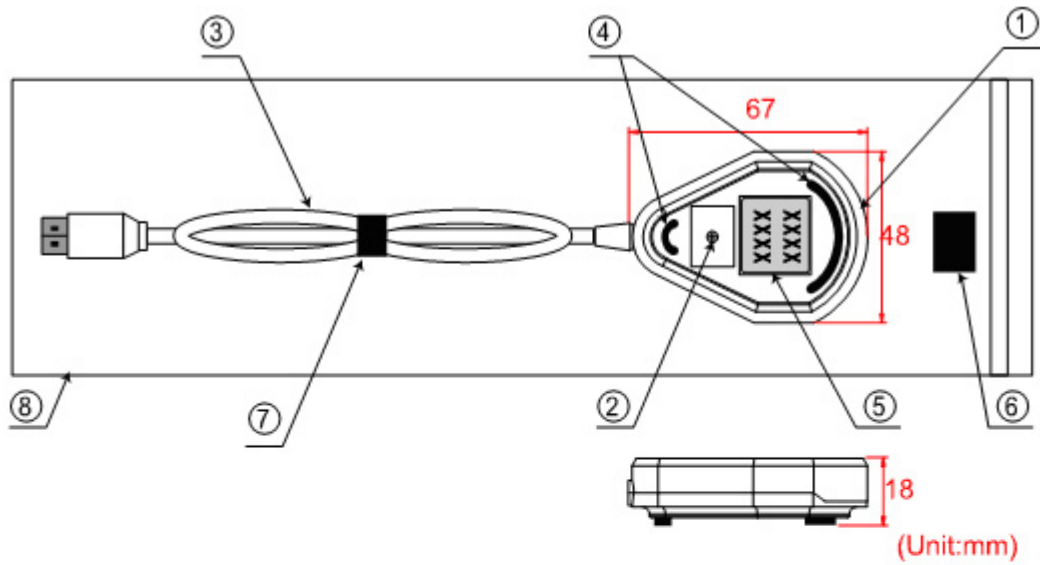


BILL OF MATERIALS

MODEL NAME: RCV-3000 IR/USB RECEIVER

	NO	PART NAME	SPEC.	LO. NO.	Q'TY	MAKER/AGENT	REMARK
CIRCUIT	1	IC, MCU	MC80F0504	U1	1	ABOVE	16 SMD
	2	USB DRIVER	FT232RL-R	U2	1	FTDI	28 TSOP
	3	RESONATOR	4.0 MHz	X1	1	Zhejiang Jiakang Electronics	LEAD
	4	RECEIVER MODULE	R24FV1A(38KHz)	RX1, RX2	2	WON KWANG	LEAD
	5	LED	WA3411(RED,3Φ)	C1	1	Zhejiang Guyue Longshan Electronics	LEAD
	6	CHIP RESISTOR	330 ohm 5%	R1	1	DAWON	1608
	7	CHIP RESISTOR	0 ohm 5%	FB1	1	DAWON	3216
	8	CHIP CAPACITOR	104pF(100nF) 5%	C1, C2	2	DAWON	1608
	9	CHIP CAPACITOR	103pF(10nF) 5%	C3	1	DAWON	1608
	10	CHIP CAPACITOR	47pF 5%	C4, C5	2	DAWON	1608
	11	Electric-CAP.	47uF/16v	E1, E2	2	Samyoung Electronic	LEAD
	12	PCB	S-400G 271 RCV-3000(STD)		1	Sinseong S.G	Double Layer
	13						
MECH	14	CASE	TOP, BOTTOM (PC Dark Violet)	BT	1set	TAEKWANG	
	15	SCREW	PT2 2.3x8(NI) Ø2.3		1	Electronics Volt	
	16	USB CABLE	Length(1400mm), USB Plug		1	P. A	
	17	RUBBER FOOT	Large, Small, Color (Black)		1set	P. A	
	18	BACKLABEL	21x19 (mm), Coating		1	JIETECH	
	19	VELCRO TAPE	17 x12 (mm) Black		1	AJIN	
	20	POLY PACK	200x87, Zipper Lock		1	Choungnam Packing	

PACKAGING DETAILS



No.	Parts	Spec.	Remark
①	Case	Top,Bottomcase : PC(Dark Violet)	
②	Screw	∅ 2.3 , Color:Silver	
③	Cable	Length: 1400 mm , Tickness:4mm , USBplug	
④	Rubber foots	2ea (Large, Small) -1Set , Color:Black	
⑤	Sticker	21x19(mm) ,Color:Metalized,Black , Coating	
⑥	Velcro Tape	17x12(mm) ,Color:Black , Adhesive tape, Both Side Set	
⑦	Tim	8(mm) ,Color:Black	
⑧	Poly pack	20x87(mm) , Zipper lock	

PRODUCT LABEL



Label Background: Silver
Label Text: Black
Date Code Format: Year/Week