

Celadon, Inc.

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TRX Series  
Infrared Remote and Receiver  
Assembly and Operation  
Instruction Manual

## I. Introduction

Thank you for purchasing your infrared remote control transmitter and infrared receiver kit. This manual explains the assembly and operation of the BW-0005 and BW-0006 infrared receivers as used with the BW-7070, BW-5070 and BW-290050 remote control transmitters. Please read the instructions through carefully before you begin.

## II. Package Contents

- One transmitter
- One receiver PCB Board
- One bag of receiver components (refer to item 5)
- Instruction Manual

## III. Receiver

### 3.1) Specifications

#### BW-0005 Receiver:

- Is an 8-key IR decoder for the BW-7070 Remote Control (Kit Part# is BW-0233)
- Independent output pins (K0-K7) each mapped to a unique key command of the BW-7070.

#### BW-0006 Receiver:

- Is a 64-key IR decoder for the BW-5070 (Kit Part# is BW-5071) & BW-290050 Remote control.
- 6-bit unlatch binary output (K0-K5) corresponding to the data received.

### 3.2) Technical Information:

- Wide operation voltage range : VDD = 2.5 to 6.0V
- Accepts REMOTEC code V2.0 to provide high level security data transmission protocol.
- 8 data output pins
- High current driving capacity for data output
- Each data pin has an individual output nature: latched & unlatch toggle to allow easier signal control design
- Optional setting to make all data output to be latched toggle
- Additional signal control output for data synchronization  
Status output pin that can be directly used to drive an LED for Multi-purpose indicator uses.

**3.3) Technical Specification Table:**

1	Max. Current Consumption	I= 45 mA(BW-0005) I= 45 mA(BW-0006)
2	Voltage Supply	DC 5V +/- 5%
3	Max. drive current for each output pin	I <sub>max</sub> = 5 mA
4	Max. IR reception distance	50 feet

3.4 Parts list For BW-0005/BW-0006 Receiver

Part Reference	Description	Quantity
U1	MCU Dip 18 pin	1
U2	38 kHz IR Receiver Module	1
-	18 pin IC DIP Socket	1
X2	4 MHz Resonator	1
R2	330 ohm, 1/4W, +/-5%	1
R12,16-23	1k ohm, 1/4W, +/-5%	9
C2 & C3	Cer. Cap. 0.1uF, +/-20%	2
C4	E. Cap. 4.7uF, 10V, +/-20%	1
C1	E. Cap. 100uF, 10V, +/-20%	1
J3	6 mm pitch jumper wire	1
J4	9 mm pitch jumper wire	1
D9	Red LED (3 mm pitch)	1
Con 0	2x7 pins dual row header	1
R1,3,13-15	10K ohm, 1/4W, +/- 5%	5
PCB	-	1

Note: Please confirm that all the components supplied with the kit are contained on this part list.

3.5 BW-0005/BW-0006 Receiver Board Layout Overview

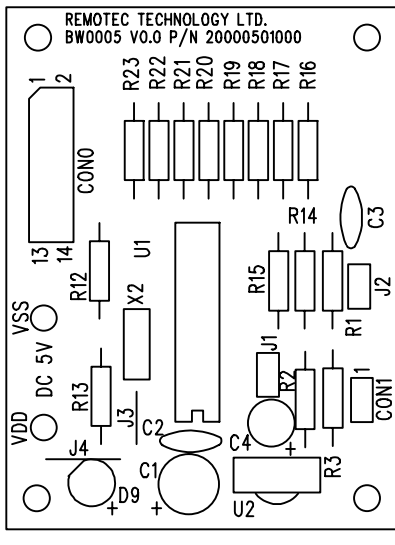


Figure 1: PCB Top View

### Connector (Con 0) Configuration

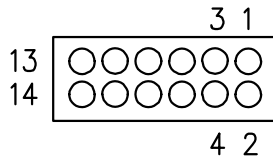


Fig. 2

## 3.6 Preparation and Installation

### 3.6.1 Equipment required:

- Soldering iron - pencil type, 33 watt or less
- Solder - Rosin core, 60/40 formula, 0.032 inch diameter recommended
- Sponge - for cleaning the soldering iron tip
- De-soldering braid - to remove excess solder that may accidentally flow between pads

### 3.6.2 Installation

- Follow the Reference and Notes closely in the following pages.
- Check to ensure that all tools are available before you start.
- Ensure that all part values are matched with the component marking on the PCB before installation.
- Insert the components firmly on the PCB before soldering.
- Do not solder the heat sensitive components too long.
- Make sure no dry joint and solder bridges are on the pads.
- Clean up all flux residue on the PCB.
- Make sure all components are inserted with their correct polarity.
- Make sure the jumper setting is correct (as shown in Section 3.8).
- If necessary, the PCB has 4 mechanical guide holes of dia. 3 mm provided for mounting the unit onto other device.

*(Caution: Non-conductive washers are required for metal stand-off.)*

### 3.6.3 Soldering Tips

- Make sure the soldering iron tip is tinned at all times
- Wrap a piece of solder around the entire length of the tip before plugging in the iron if using a tip for the very first time
- Before beginning, allow solder to flow over the entire surface area of tip
- Always keep the soldering tip tinned after heating up the soldering iron
- Use a damp sponge to wipe all excess solder off the soldering iron tip
- Do not solder the heat sensitive components too long
- Components should not be moving at all while the solder is cooling
- Make sure there is no dry joint and solder bridge on the pads

### 3.7 Power Requirements

- DC 5V +/- 5% source between VDD and VSS of the IR decoder.

### 3.8 Jumper Setting

Model	Jumper (J1)	Jumper (J2)	Output wave form
BW-0005	Open	Open	Unlatch Signal. (default)
BW-0006	Open	Open	Binary Unlatch Signal. (default)

## IV. Transmitter

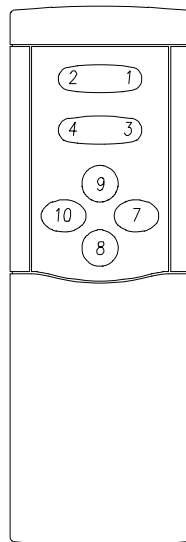
### 4.1 Battery required for transmitter

Model	Type	Quantity (pcs)
BW-7070	AAA	2
BW-5070	AAA	2
BW-290050	AAA	4

## 4.2 Operation

- Insert new batteries in the battery compartment
- Place the receiver so that you can directly aim at the receiver's IR module at a distance of 50 feet or less
- Apply power to the remote control receiver  
Since the TRX series comes in pair with matched infrared code, it will work immediately without any learning or programming  
Position the transmitter directly at the receiver, press and hold the button you wish to assign
- Keys can be configured for momentary action

### Key No. Location



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**BW-07070**

**For BW-7070**

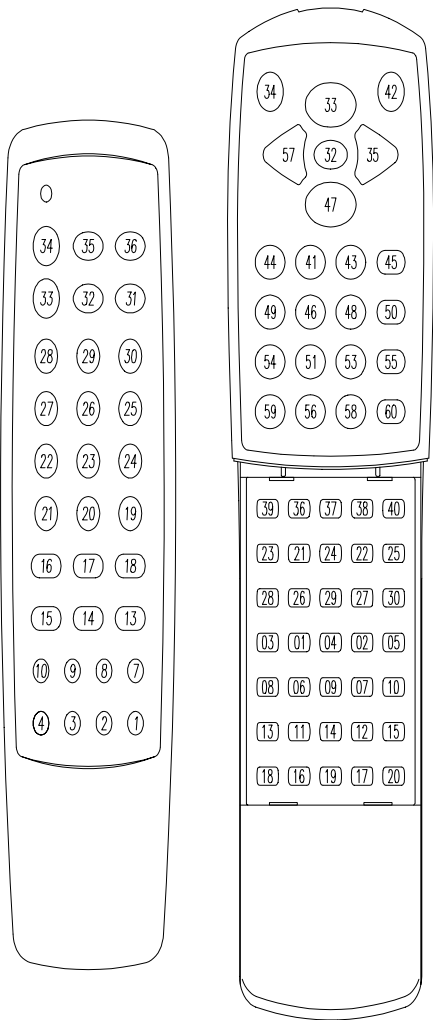
SYSTEM CODE '01010110'

Remote key no. , Tx'er data &amp; Data output form decoder table

1) Remote Key No.	2) Tx'er Data	3) Data output from BW-0005 IC description (K7.....K0)
1	111101	11111011
2	111110	11110111
3	111011	11101111
4	111100	11011111
7	000101	10111111
8	111111	11111110
9	111010	11111101
10	000011	01111111

Note: In column no. 3, Data '0' stand for output **LOW**, Data '1' stand for output **HIGH**.





**BW-5070**

**BW-290050**

**For BW-5070 Transmitter**

SYSTEM CODE '01010110'

Remote key no. , Tx'er data & Data output form decoder table

1) Remote Key No.	2)Tx'er Data	3)Data Output from the BW-0006 IC (K5....K0)	1) Remote Key No.	2)Tx'er Data	3)Data output from the BW-0006 IC (K5....K0)			
1	000001	111110	33	100001	011110			
2	000010	111101	34	100010	011101			
3	000011	111100	35	100011	011100			
4	000100	111011	36	100100	011011			
7	000111	111000						
8	001000	110111						
9	001001	110110						
10	001010	110101						
13	001101	110010						
14	001110	110001						
15	001111	110000						
16	010000	101111						
17	010001	101110						
18	010010	101101						
19	010011	101100						
20	010100	101011						
21	010101	101010						
22	010110	101001						
23	010111	101000						
24	011000	100111						
25	011001	100110						
26	011010	100101						
27	011011	100100						
28	011100	100011						
29	011101	100010						
30	011110	100001						
31	011111	100000						
32	100000	011111						

Note: In column no. 3, Data '0' stands for output **LOW**, Data '1' stands for output **HIGH**.

**For BW-290050**

SYSTEM CODE '01010110'

Remote key no., Tx'er data & Data output form decoder table

1) Remote Key No.	2) Tx'er Data	3) Data output from the BW-	1) Remote Key No.	2) Tx'er Data	3) Data output from the BW-0006
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0006 IC (K5...K0)			IC (K5...K0)		
01	000001	111110	33	100001	011110
02	000010	111101	34	100010	011101
03	000011	111100	35	100011	011100
04	000100	111011	36	100100	011011
05	000101	111010	37	100101	011010
06	000110	111001	38	100110	011001
07	000111	111000	39	100111	011000
08	001000	110111	40	101000	010111
09	001001	110110	41	101001	010110
10	001010	110101	42	101010	010101
11	001011	110100	43	101011	010100
12	001100	110011	44	101100	010011
13	001101	110010	45	101101	010010
14	001110	110001	46	101110	010001
15	001111	110000	47	101111	010000
16	010000	101111	48	110000	001111
17	010001	101110	49	110001	001110
18	010010	101101	50	110010	001101
19	010011	101100	51	110011	001100
20	010100	101011			
21	010101	101010	53	110101	001010
22	010110	101001	54	110110	001001
23	010111	101000	55	110111	001000
24	011000	100111	56	111000	000111
25	011001	100110	57	111001	000110
26	011010	100101	58	111010	000101
27	011011	100100	59	111011	000100
28	011100	100011	60	111100	000011
29	011101	100010			
30	011110	100001			
32	100000	011111			

Note: In column no 3, Data '0' stands for output **LOW**, Data '1' stands for output **HIGH**.

### Connector (Con 0) Configuration

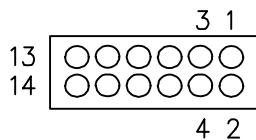


Fig. 2

Pin	Description of U1	Pin	Description of U1
1	K0	8	K7
2	K1	9	LATCH
3	K2	10	STATUS
4	K3	11	VSS
5	K4	12	VDD
6	K5	13	N.C.
7	K6	14	N.C.

Note:

Pin 1-8: Data Output

Pin 9 : LATCH signal which strobes when data is ready on the data output lines

Pin 10 : STATUS signal flashes for any valid code received.

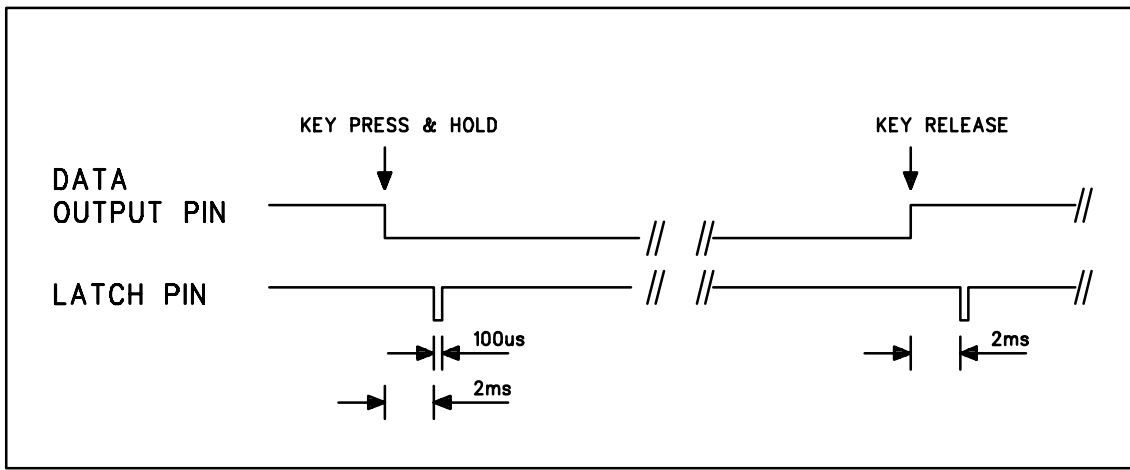
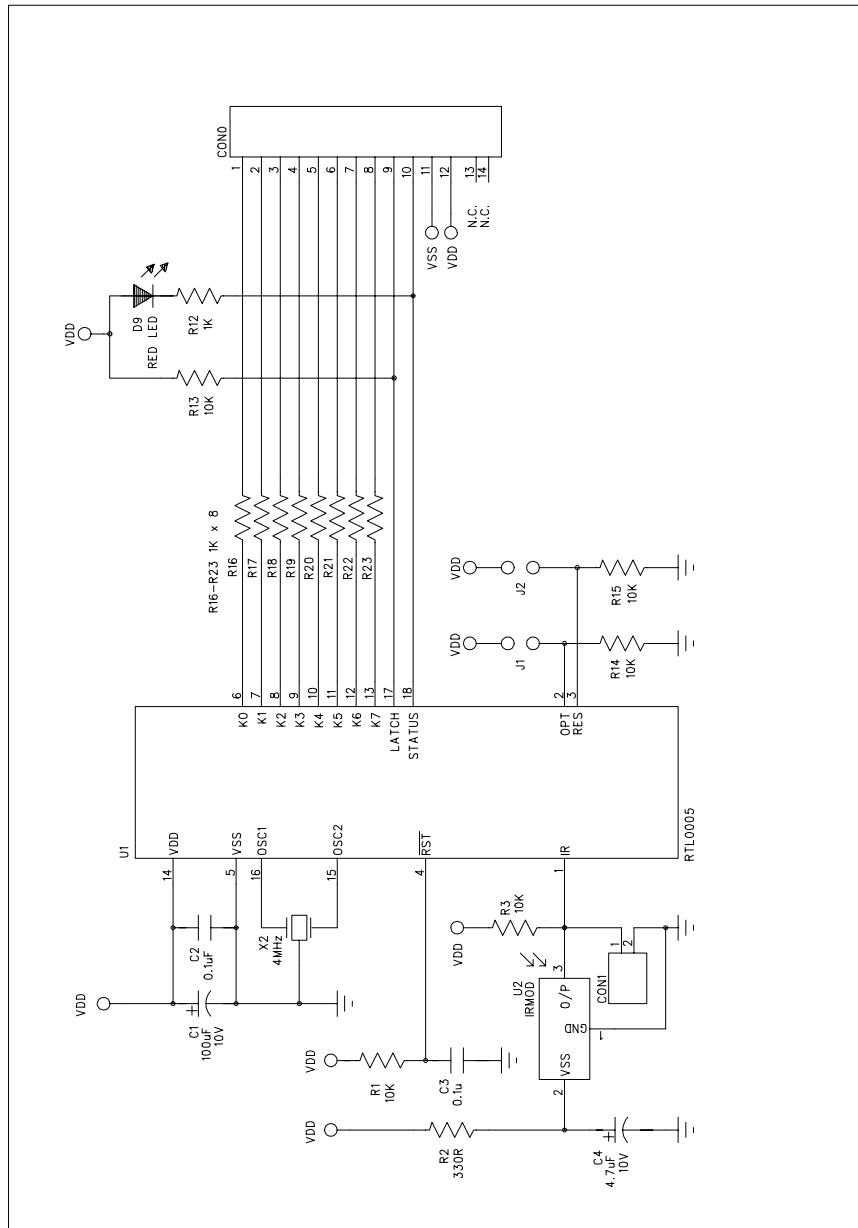


Fig 3 Unlatch Output Signal



## BW-0005/BW-0006 Schematic

Celadon, Inc. is the North America sales and distribution office for Remote Technology Ltd. All questions regarding this manual and the products described should be referred to Celadon, Inc.

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