

**DESCRIPTION: OPERATION MANUAL,
RCT-1 SWITCH TX ENCODER AND
RCR-2 SWITCH RECEIVER MODULE**

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Purchasing _____

RCT-1 Switch Encoder and RCR-2 Switch Receiver Module

Detailed operating instructions, frequency and code options.

Encoder

The purpose of the RCT-1 Switch Encoder and RCR-2 Switch Receiver Module is to remotely activate audio transmitters, recorders, camera, encryption, and microwave video transmitter packages via a secure wireless link at distances up to 100 Meters. The handheld encoder is a license-free, Part-15 battery operated device with an integral rubber duck antenna. The low power 900 MHz signal is digital FSK modulated and digitally coded for security.

Switch Receiver

The miniature switch receiver unit, which detects this signal, is typically inserted between a power source like a battery pack and a load. Voltages as high as 30 VDC at 2 Amps or 117 VAC at ½ Amp can be switched.

The control signal from the RCT-1 is also digitally coded with an 8-bit user selectable address. Seven user-selectable channels in the 902-928 MHz band are made available. This band was selected because it is likely to be different from the frequencies used in the audio transmitter or microwave video link, thus reducing the possibility of interference from these transmitters.

As configured from the factory, the switch receiver unit provides a dry switch closure. The small antenna provided must be attached to the connector located on the module. Range extension can be accomplished by locating the unit as high and in the clear as possible with the antenna in a vertical orientation. External antennas such as standard 900 MHz GSM cellular vehicular antennas are also useful.

Security

The digital bitstream which includes the ON and OFF bits is encoded. 7 channels in the 902 –928 MHz band are available and these are user –selectable via a rotary switch located on the PCB, by removing the cover. The receiver must be pre-set to the same channel as the handheld encoder.

<u>Channel</u>	<u>Frequency</u>
0	903.370
1	906.370
2	907.870
3	909.370
4	912.370
5	915.370
6	919.870
7	921.370

In addition to matching the channel setting, the 8 security address bits of the receiver must exactly match that of the encoder. The security address bits are set via a dip switch on the PCBs.

Independent ON and OFF Commands

The control signal is of very short duration (< 5 seconds) and is intermittent in nature. That is, it only needs to be sent once for turn on or turn off. Rather than a simple toggle state system, independent ON and OFF commands are recognized. This eliminates the problem of not knowing or remembering what the last state the receiver was in.

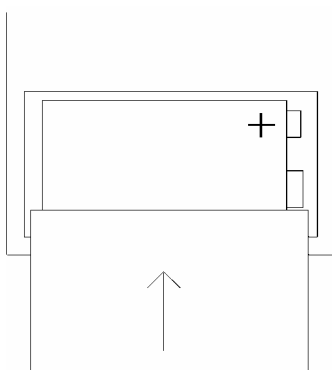
The command buttons (VIDEO ON and VIDEO OFF) should be pressed for a minimum of 2 seconds. ALWAYS TEST THE SYSTEM TO ASSURE THAT THE ENCODER AND SW RECEIVER ARE SET PROPERLY AND FUNCTION BEFORE DEPLOYMENT.

RCT-1 Handheld Encoder

The Handheld Encoder is a remote control transmitter, which provides secure short-duration command signals for the Switch Receiver module. When used in conjunction with a properly deployed switch receiver, a range of more than 100 Meters is available (note: the antenna is not removable). The signal duration and power output of the handheld encoder is extremely low and the transmission is digitally encoded. The size of the units is 5.0 X 2.75 X .75 Inches plus 3 Inches for the antenna.



Always start with a fresh Alkaline or Lithium 9VDC battery. The battery compartment may be accessed by pushing down and back on the battery door and removing it. Insert the battery as shown:



BATTERY REPLACEMENT

Controls

The front panel of the RCT-1 has three switches and two LED indicators:

ON-OFF This switch applies power to the device. When ON, the green LED will illuminate.

VIDEO ON This momentary pushbutton sends the switch closure command (ON).

VIDEO OFF This momentary pushbutton sends the switch open command (OFF).

RED LED – This indicator will blink during the ON and OFF command transmissions indicating that data is being sent.

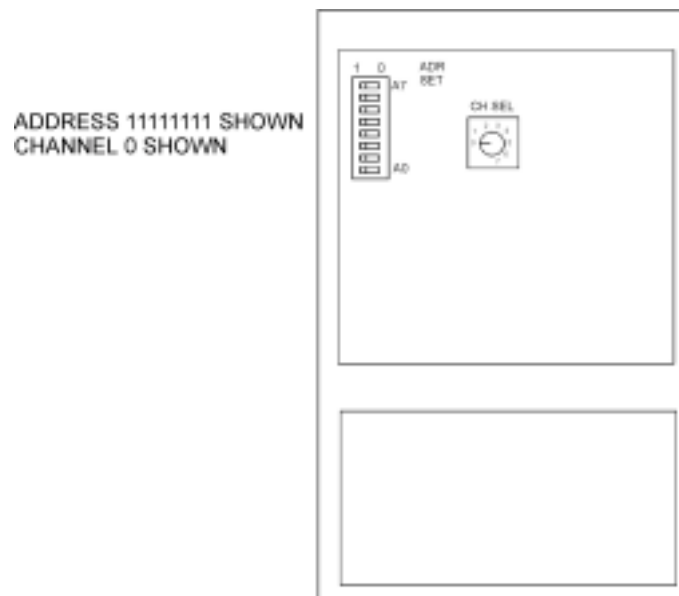
The command buttons (VIDEO ON and VIDEO OFF) should be pressed for a minimum of 2 seconds. Do not be afraid to send the command signal several times while changing position or closing the package, if the receiver does not initially respond. ALWAYS TEST THE SYSTEM TO ASSURE THAT THE ENCODER AND SW RECEIVER ARE SET PROPERLY AND FUNCTION BEFORE DEPLOYMENT.

Keep the unit turned OFF when not in use.

Changing Channels or Address Code bits

The Channel and 8 Address Bits in the handheld encoder must be set to agree with the Switch Receiver module code settings to allow control to occur.

To access the board for channel and address bit settings changes, first remove the battery door and the battery and then the four Phillips head screws on the rear of the unit. Carefully split the two halves and access the switches, being careful not to break or stress the wiring. After switch setting, re-mate the halves; replace the four screws and the battery and battery door.



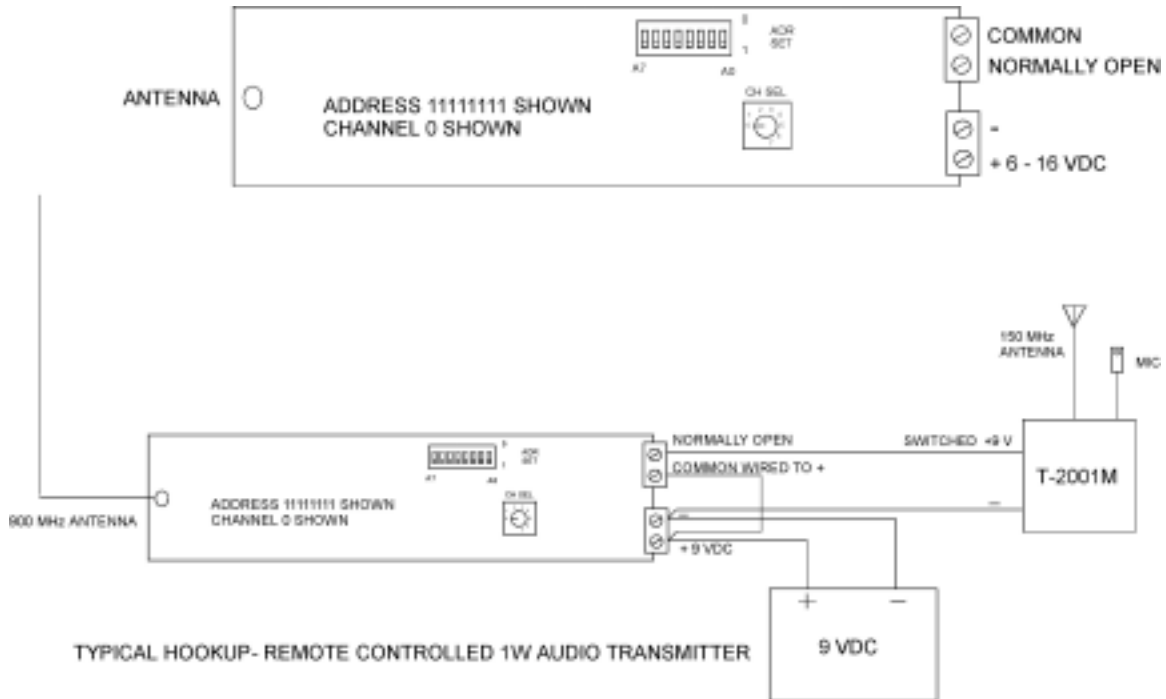
Note: When this transmitter is operated in countries outside the USA with a 900 MHz GSM network, channels 5, 6 and 7 are preferred, since they fall between the TX and RX cellular band segments.

Channel	Frequency
0	903.370
1	906.370
2	907.870
3	909.370
4	912.370
5	915.370
6	919.870
7	921.370

RCR-2 Switch Receiver Module

The RCR-2 (Remote Control Receiver) can be operated from 6 to 16 VDC and draws less than 20 mA in all modes. It is equipped with an antenna, and two screw terminal blocks, one for external DC power and a block for the normally open relay contacts. A small “noodle” antenna, equipped with an MMCX connector, is provided with the receiver. The size of the unit is 5 X 1 X ½ Inches.

The hookup diagram shows a typical application; the RCR-2 controlling a 1 watt audio surveillance transmitter, both SHARING a single power supply. The battery pack should be designed to support both the ON time of the 1 Watt transmitter and the standby current of the switch receiver over the operational period. Separate power sources may also be employed.



Latching Relay Feature

The Switch Receiver Module controls the power to the system via a latching type relay. This relay does not require power to remain in the last state that it was set to. That is, if it was set to provide power and the power source is removed, the relay remains latched.

Power On Reset

When the Switch Receiver Module is initially powered or its power is removed for 5 seconds or more and it is reapplied (attaching a rechargeable battery for instance), the relay will automatically default to the OFF or OPEN state.

Standby Operation / Operating Life

When the Switch Receiver Module is in the OFF state, only the receiver module is drawing current. This drain is typically less than 20 mA. With a fully-charged 2 Ampere-Hour battery, the unit could remain in standby for two days (48 Hours) and still provide more than 1 hour of video transmission.

Controlling Other Devices

The unit, as configured from the factory, provides a switched dry contact normally open set of contacts. These contacts are closed when the ON command is received. Any external voltage up to 30 VDC at 2 Amps or 117 VAC up to 0.5 Amps can be controlled. Normally open (N.O.) contacts have been brought out to the terminal block.

Changing Channels or Address Code bits

The RCR-2 channel switch and address switch may be accessed by first removing power and unscrewing the four flathead Phillips screws holding the ABS case to the standoffs. The ABS housing will fall off revealing the circuitry. The figure above shows the location of the channel and address switches. After setting the switches, replace the cover and screws.

FCC Information:

DTC Communications, Inc.
75 Northeastern Blvd.
Nashua, NH 03062

Model RCT-1
FCC ID: H25 RCT1

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference including interference that may cause undesired operation.