

# RF Remote Receiver/Decoder Module

Sunrom  
Part#  
**1443**

Decodes variety of remote controls having EV1527 learning code or PT2262 series fixed code, Secure Operation, Can store up to 50 Transmitters, Various Output options Momentary, Toggle, Latch, Any 1 of 8, Binary, Separate ON/OFF switch etc. 433Mhz, 3.3V-5V

User's  
Manual

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## Introduction

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The module receives RF signal at 433 MHz transmitters and implements secure decoding of various ICs. Secure here means the chip responds only to transmitters which are earlier stored in the chip. If an unknown transmitter is operated, the chip will not respond. The storing of new transmitters is a onetime process. Once stored, it will be stored in non-volatile memory even after power off.

Storing of the new transmitters are carried out with the help of on board switch. Maximum 50 Transmitters can be stored in the module.

Output configuration can be set by on board jumper.

## Features

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- Secure Operation
- Simple and Easy to use
- Decoders both learning type and fixed type transmitters
- Handles all complexity related to RF and Decoding data
- Small size, Easier mounting
- Reliable and Sturdy operation
- Built in LED indication for Valid Transmitters
- Wide operating range from 3.3V to 5V
- UART TX Output for external interfacing
- Direct relay driving with ULN2003
- On board jumper to select various output mode
- Crystal Stable RF Receiver
- All interfacing IO on header

## Typical Applications

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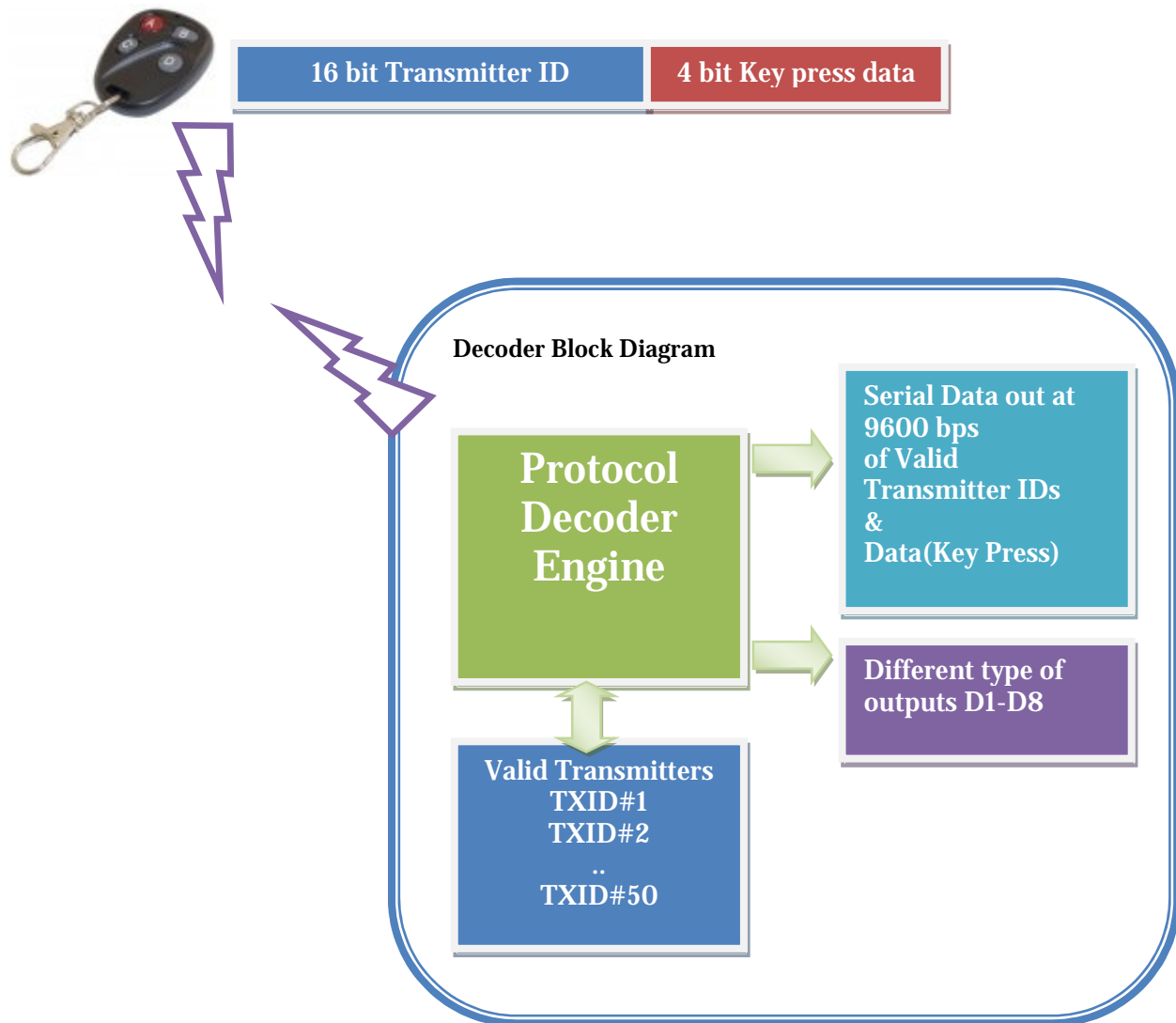
- RF Remote control
- Security Systems
- Access control
- Identity discrimination
- IT home appliance control
- Smart house products
- Car Garage Door Opener
- Front Gate Opener

## Block Diagram

The remote control transmitter transmits 16 bit ID + 4 bit data containing value of which key is pressed on 433 MHz frequency.

The same data is received by module. It looks up the ID in already stored list, if found, then it outputs its data serially at 9600 baud rate and controls different type of output based on which key was pressed.

There is a store switch on board which can put the IC in store mode where it will listen to transmitter and when a key is processed on it, it stores the ID of transmitter for future valid access.



## Specifications

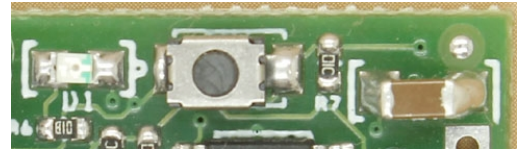
Parameter	Value
Working Voltage	3.3V to 5V DC regulated power supply
Current Consumption	25 mA
Memory Capacity	Maximum 50 transmitters can be stored in the module
Frequency of Operation	433MHz
Serial Baud rate	9600 bps
Baud rate format	8-N-1; 1 Start bit, 8 Data bits, 1 Stop Bits, No Parity
RF Bit rate	250 kbps
On Board controller	STM8S003F3
Chipset Decoder	Learning Code EV1527 and Fixed Code types PT2260, PT2262, PT2264, HS2260, SC2262, SC2260

## Module Pin Details

Pin	Details
GND	Common Ground
VCC	Regulated positive power input 3.3V to 5V DC
TX	Transmit Output - UART TTL level - Connects to RXD pin of microcontroller
VT	Valid Transmitter Detected -Active Low Output. Idle condition is High level. When chip detects valid transmitter signal, it outputs LOW level signal for 100mS. Same VT pin is having a on board RED LED to indicate status.
D1-D8	Various Outputs, See Output Jumper configuration Section

## Store Transmitter IDs through switch

The board needs that the transmitter IDs to be stored in its internal memory before it can decode or respond to particular transmitter. Each transmitter has 16 bit ID which always has to be known by IC before it responds to it in future. That way it is secure method of remote control allowing only known transmitters to be responded.



The switch shown in picture above can be used to enter new transmitters into IC's memory or clear all IDs in memory.

### Store Transmitter IDs in memory

Brief press of switch will put the IC in listening mode

- Status LED blinks every second
- Now press a transmitter key for 5 second for which you want to store its ID
- When it has been stored the status LED becomes off and normal operation starts

Repeat the same for as many transmitters you want to enter in its memory. You can do up to 50 IDs after which the IC starts again from zero memory location like First In-Last Out method.

### Clear all transmitter IDs in memory

Long press of 10 seconds clears all 50 Transmitter IDs in its internal memory. LED blinks very fast during this time and when it goes off it means the internal memory is cleared of all transmitter IDs.

## Serial output data format

The output of data from is 9 bytes fixed length ASCII characters. The baud rate of output is 9600 bps. It output the transmitter ID and the Data values in HEX ASCII format.

The string starts with # and ends with 0x0D which is acting as line feed character or End of string identifier.

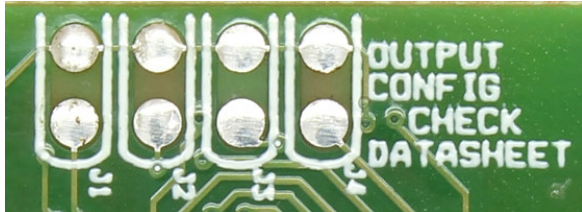
Output is typical like #25AF:01 <Enter Key Code 0x0D>

where the first four bytes are ID of transmitter and last two bytes are key press details.

## Output Configuration Jumpers

Back side of module you will find four jumpers J1 to J4

The J4 jumper is for selection between which chip to decode. The default is open which decodes EV1527 chipset which is learning type. You can short J4 jumper to have to board decode PT type fixed code chipset.

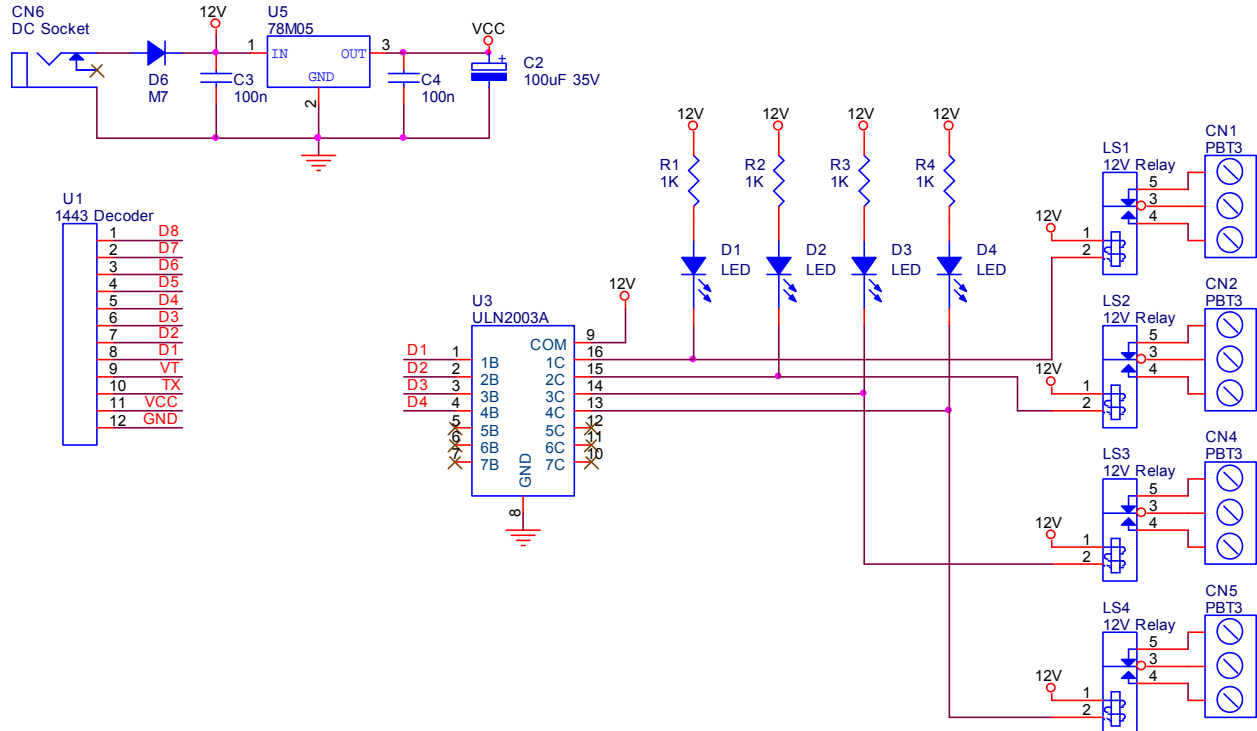


Rest J1 to J3 are for setting output configuration as per table below.

JUMPERS			Outputs Configuration							
J3	J2	J1	1	2	3	4	5	6	7	8
O	O	O	T	T	T	T	T	T	T	T
O	O	C	M	M	T	T	T	T	T	T
O	C	O	M	M	M	T	T	T	T	T
O	C	C	M	M	M	M	M	M	T	T
C	O	O	M	M	M	M	M	M	M	M
C	O	C	4 Bit Binary Output on D1-D4							
C	C	O	Any 1 of N Output active anytime							
C	C	C	Separate ON/OFF Switches Mode: Four relays operated from 8 switches							
O = Jumper Open C = Jumper Close Short with Soldering			T= Toggle between ON or OFF for each new key press M = Output ON till switch is pressed, Goes off after switch is released							

## Connecting Relays to Output

Typical application in remote control, There is a power supply to convert 12V to 5V for module. The output relays are driven by ULN2803 which is NPN transistor array for such application.

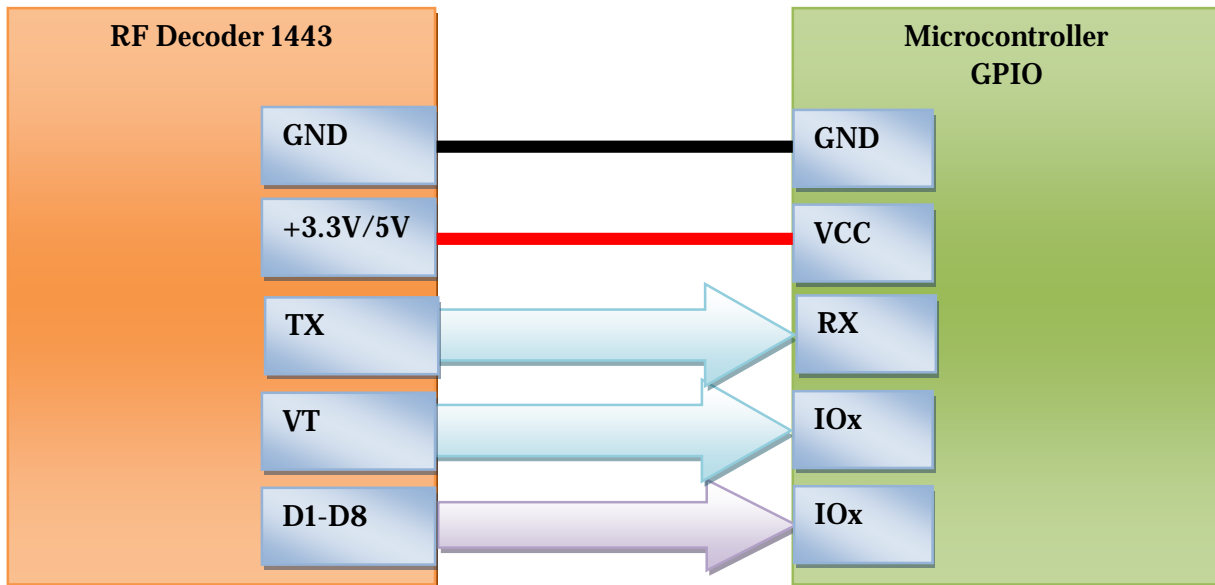


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Title 4 CH RF Remote			
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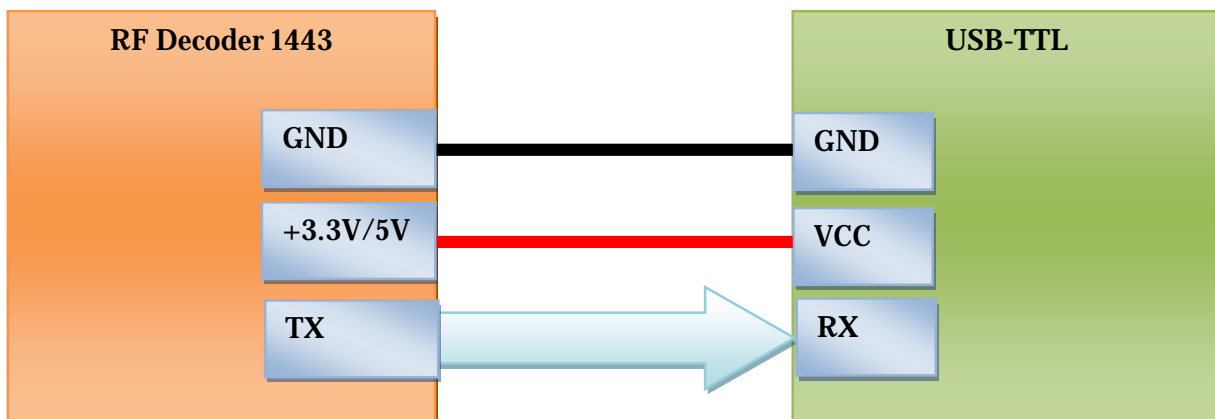
## Interfacing with Microcontroller

If you want to operate with microcontroller then it's very simple to connect by various pins.

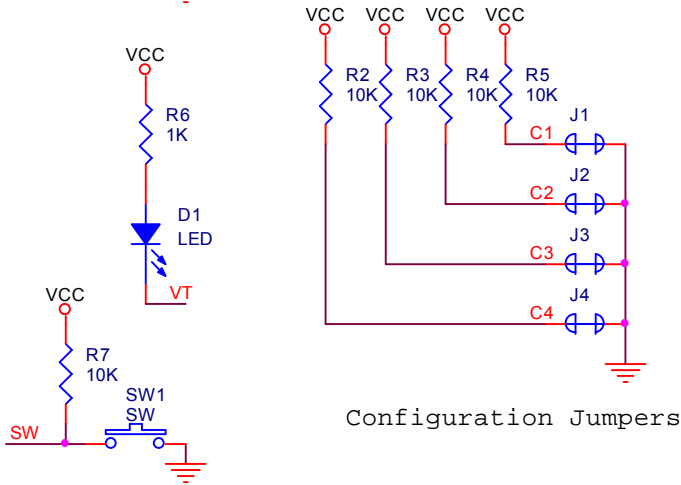
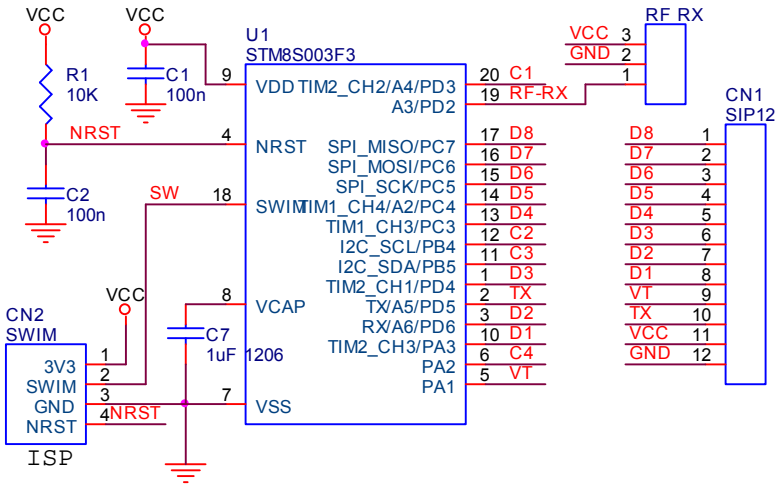


## Monitoring data on UART

If you want to operate with PC terminal then you can use USB-TTL (Not RS232).



## Board Schematic



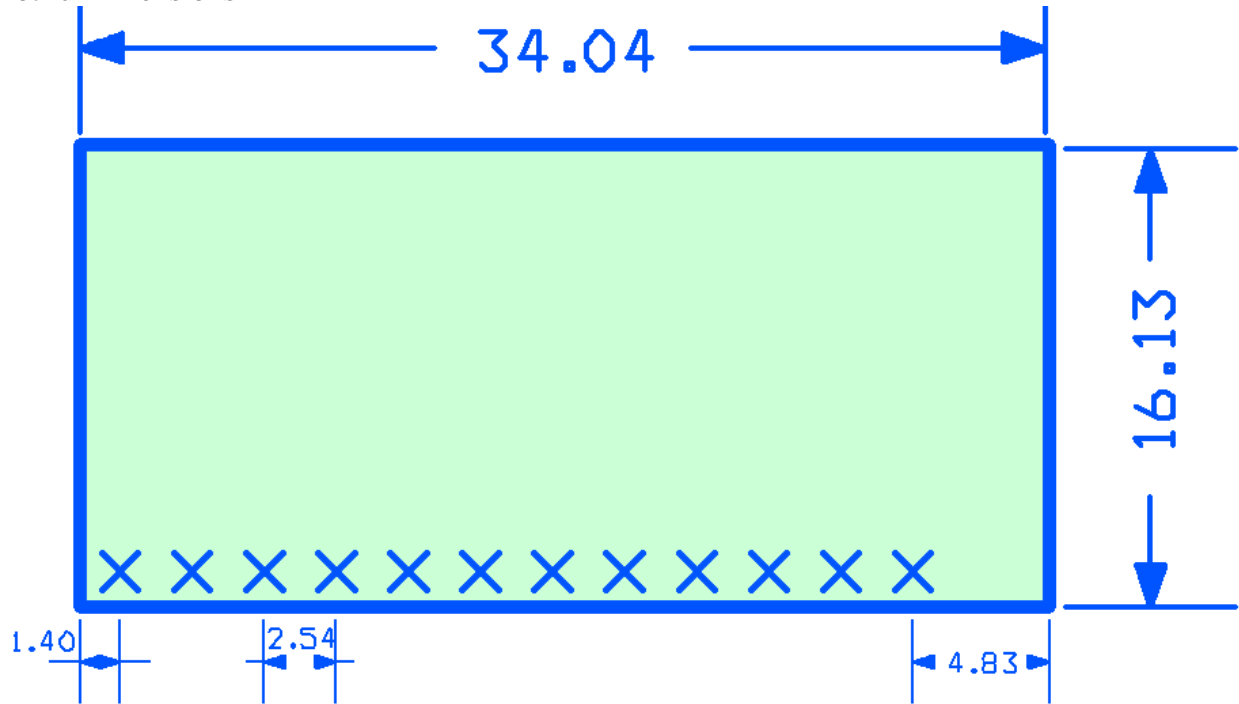
Configuration Jumpers

Store Switch

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## Product Dimensions

Board Dimensions in mm



## Support

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Sunrom Electronics offers free technical support ([www.sunrom.com/contact](http://www.sunrom.com/contact)) for customers, until the end of the product's lifetime, so if something goes wrong, we're ready and willing to help!

Technical Support is available by email only and scope is limited to problem faced during use of the use of product and does not cover end user programming and hardware troubleshooting.

Each product passes through strict quality checks before it reaches you. So if something is not working out right, the first thing to doubt is the connections or programming of your hardware.

## Disclaimer

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