

SP1003 INFRARED RECEIVER SYSTEM

DESCRIPTION

The Innotech Systems' SP1003 Infrared Receiver System provides a convenient means of enabling computer-based systems to receive infrared control signals from universal remote controls via the serial port.

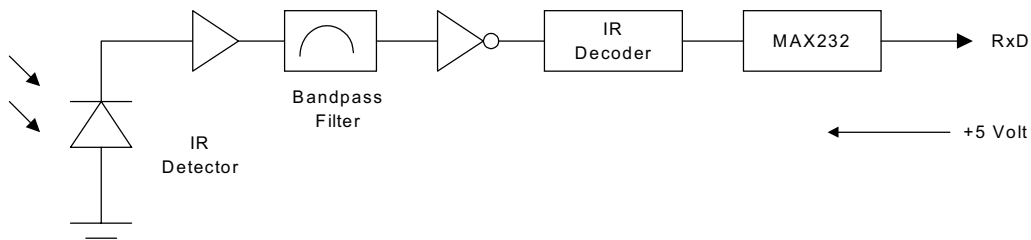
The SP1003 Infrared Receiver System converts conventional NEC protocol IR codes from universal remote controls into serial ASCII commands for interpretation by a host CPU. The SP1003 validates the received data before transmitting the received button code information as a three-byte ASCII message at 9600 Baud. This message can be received

by the PC-based HyperTerminal application or other communication software.

The NEC infrared remote control protocol is among the most popular, and is used by NEC, Hitachi, Toshiba and Mitsubishi among others, and is available on all universal remote controls, the Innotech Systems' Spit*FIRE*, and Innotech Systems' remote control ICs.

The SP1002 is packaged in a 3" x 5" housing and includes DB9 connector cable and power supply.

BLOCK DIAGRAM



Package



Description of DB9 Pin Functions

Pin	Function
1	
2	RxD (RS232 IR Data to PC)
3	
4	
5	GND
6	DSR (continuously asserted)
7	
8	
9	



DESCRIPTION OF OPERATION

The SP1003 Infrared Receiver/Decoder converts conventional NEC protocol IR codes from universal remote controls into serial ASCII commands for interpretation by a host controller.

The NEC protocol consists of a 32 bit sequence. In normal use, the first 16 bits in an NEC code are the customer and product ID bytes, the next 8 bits (the third byte) are the button code, and the last 8 bits, used for error checking, are the third byte inverted. The SP1003 IR Receiver decodes the entire 32 bit

code. Before outputting data, the receiver checks that the code is valid by insuring that there are 32 correctly timed bits and that byte 3 (the button code) is properly equal to byte 4 inverted.

For maximum flexibility, the receiver disregards the data content of the first 16 bits, ensuring that it will accept any valid NEC customer and product code. If the decoder validates the data, it will transmit the button code (3rd byte) as a 3 byte asynchronous serial ASCII message at 9600 baud.

CODE DESCRIPTION

The serial message format is as follows:

HexCodeMSB HexCodeLSB Carriage_Return

The HexCodes are printable hexadecimal ASCII from 0-9 or A-F and represent one nibble of the code. The Data Bits 7-4 are sent first followed by Data Bits 3-0.

For example, if the binary code is 10101000 (A8) the IC1003 IR Receiver will output:

'A' '8' CR or

41h 38h 0Dh

at 9600 baud, 8 data bits, no parity, with 1 stop bit.

COMPATIBLE CODES

The SP1003 is compatible with all universal remote controls including universal remote controls designed by Innotech Systems. When used with Innotech System's universal remote controls or with the Innotech Systems' SpitFIRE, the SP1003 is compatible with device codes 1-37 (without

repeating keys) and device codes 57-62 (with repeating keys). The user will need to determine the appropriate device codes for other brand universal remote controls.