

Twisted-Pair Cable-CAT5, Composite Video Differential Receiver Amplifier

The circuit presented here is a high frequency differential line receiver amplifier which has excellent common-mode rejection at its inputs. The project is an ideal solution for a receiver for composite video signals that are transmitted over long distance on twisted-pair cables like CAT5. Category 5 cables are very common in office settings and are extensively used for data transmission. These cables can also be used for the analog transmission of signals such as video. These long cables pick up noise from the environment they pass through. This noise does not favour one conductor over another and therefore is a common-mode signal. A receiver that rejects the common-mode signal on the cable can greatly enhance the signal-to-noise ratio performance of the link.

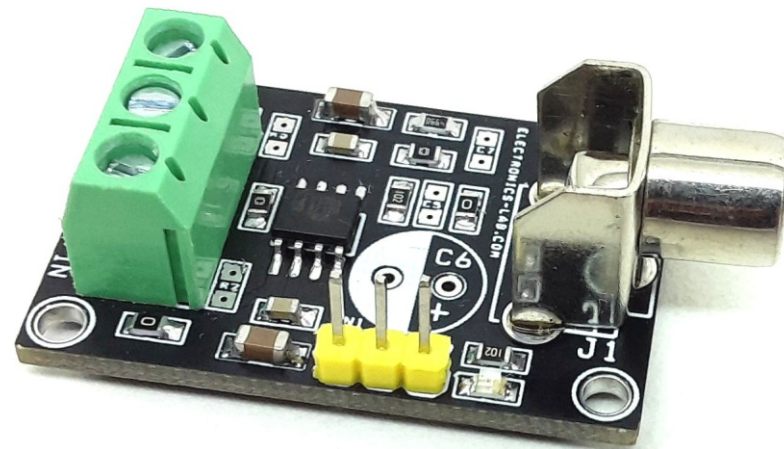
This project converts differential Video/Digital signals into single-ended signals and can be paired with Single-ended Video/Digital input to differential output driver (High Speed Differential Driver) project published on our website.

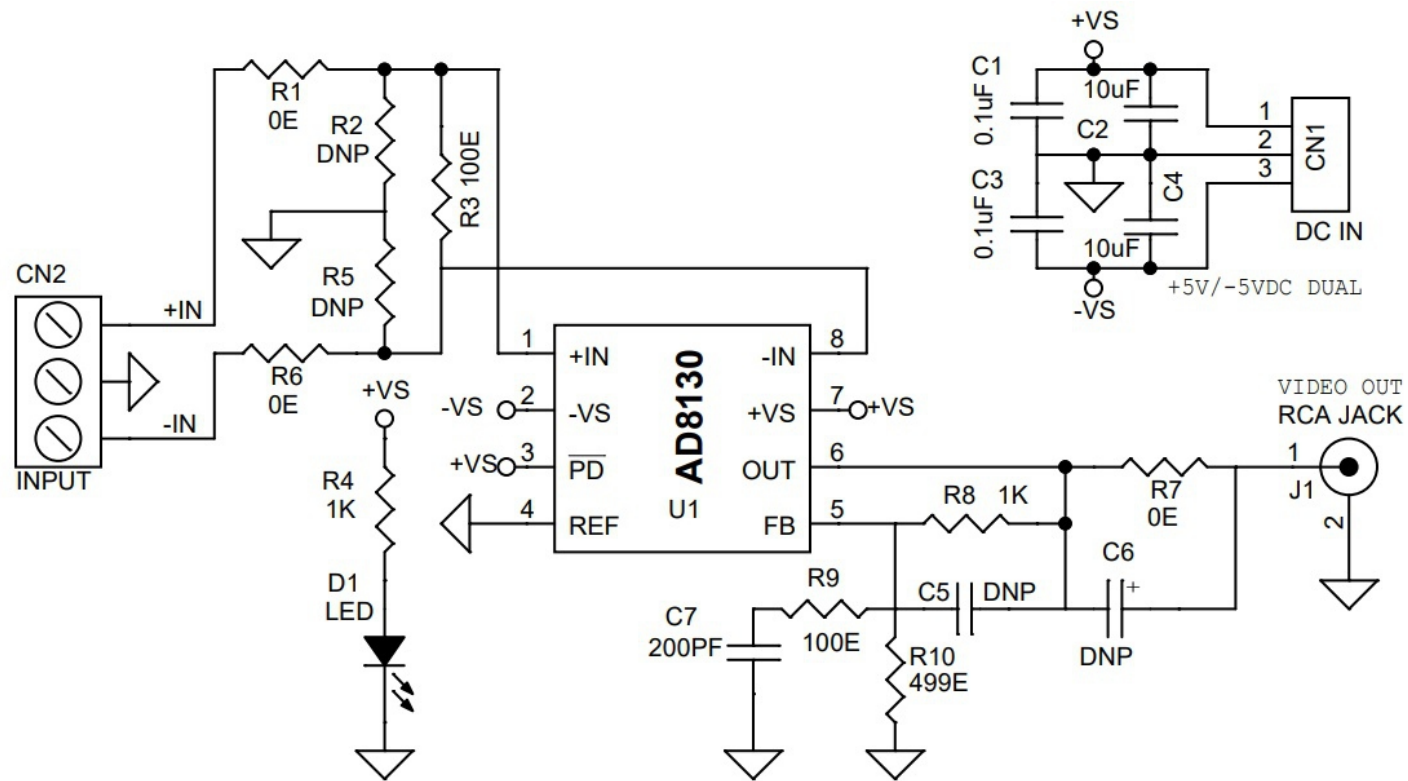
<https://www.electronics-lab.com/project/single-ended-video-digital-input-to-differential-output-driver-high-speed-differential-driver/>

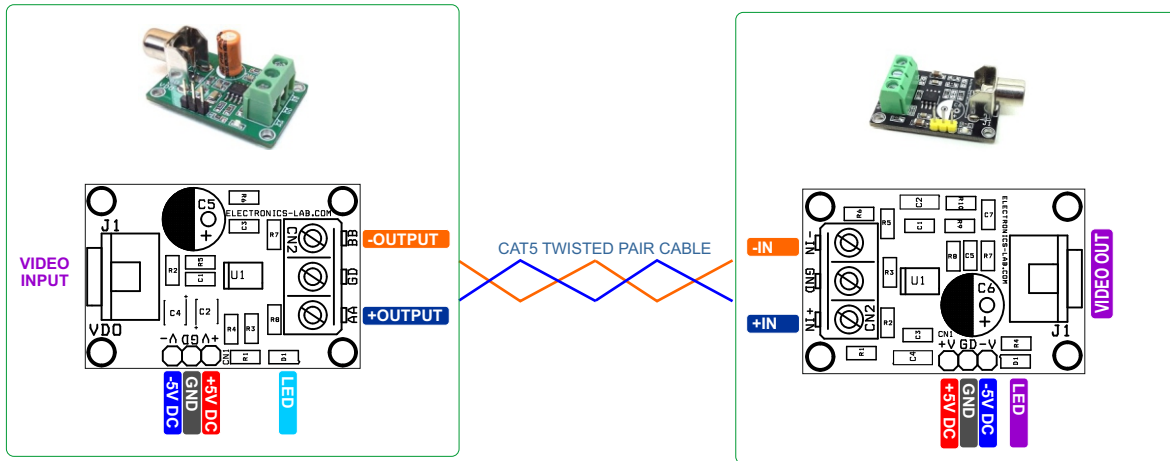
Transmitter and receiver work in tandem to convert a Composite Video signal to differential signal and transmit it over a single CAT-5 cable pair to a projector, monitor, or television. Ideal for digital signs, schools, temples, and trade shows. Line driver and line receiver projects can be used to transmit and receive composite video signals over 300 meters of category 5 (CAT-5) cable. The cable has an attenuation of approximately 20dB at 10Mhz for 300 meters.

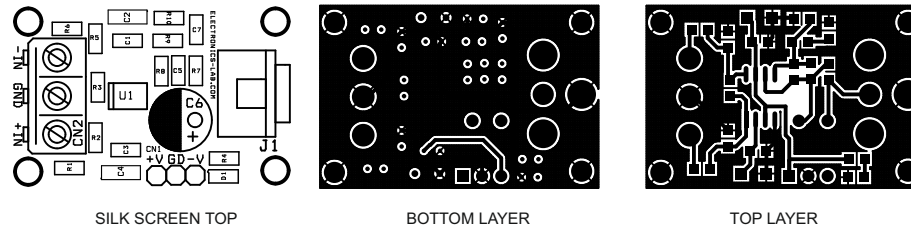
Features

- Operating Supply Dual +5V/-5V (+/-5V) @ 80mA
- Compact Solution for Video Transmitter and Receiver over CAT-5 Twisted Cable
- Screw Terminal for Twisted Pair CAT-5 Cable
- RCA Connector for Video Outputs
- Header Connector For +5V/-5V Supply input
- Onboard Power LED
- PCB Dimensions 37.31MM X 24.45MM









PCB DIMENSIONS 37.31MM X 24.45MM

BOM						
NO	QNTY	REF	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5316-ND
2	1	CN2	3 PIN SCREW TERMINAL PITYCH 5.08MM	PHOENIX	DIGIKEY	277-1248-ND
3	2	C1,C3	0.1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
4	2	C2,C4	10uF/10V SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
5	4	R2,R5,C5,C6	DNP		DIGIKEY	
6	1	C7	200PF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
7	1	D1	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
8	1	J1	RCA JACK	CUI DEVICE	DIGIKEY	CP-1405-ND
9	3	R1,R6,R7	0E SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
10	2	R3,R9	100E 5% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
11	2	R4,R8	1K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
12	1	R10	499E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
13	1	U1	AD8130	ANALOG	DIGIKEY	2156-AD8130AR-AD-ND