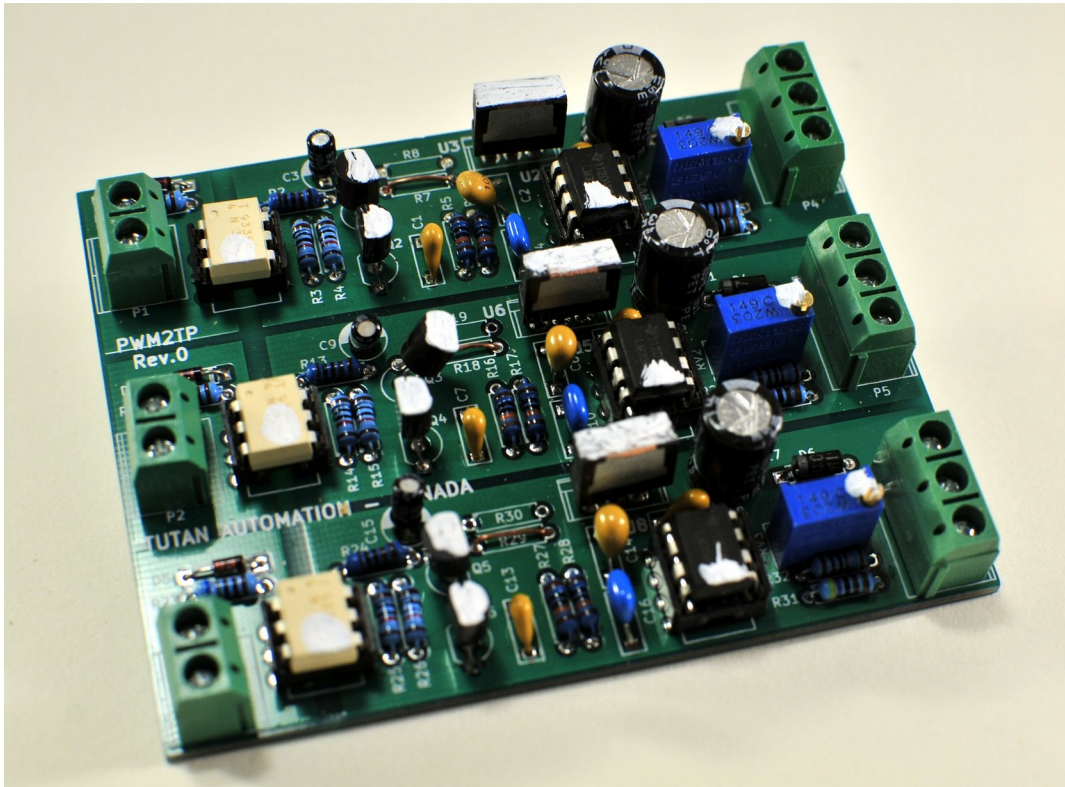


Isolated 3 channel PWM to Analogue Converter



This board houses three independent PWM to 0-10V analogue converters with optical input-output isolation. It is suitable to interface controllers with PWM (TTL level) outputs to standard Variable Frequency Drives (VFD) or similar devices that require analogue input set-points to control an operational parameter (i.e speed, torque, etc.)

The output stage includes a 16Hz low-pass filter with 12 dB/Octave attenuation to provide a smooth analogue signal with very low ripple.

SPECIFICATIONS

- Number of channels: 2 or 3
- PWM input: TTL level. Max frequency 1 KHz
- Output voltage: Adjustable 0 to 5..12V
- Output current: 30 mA max. Per channel
- Linearity: 0.5% FSD
- Isolation: Min. 500 Vac
- Power voltage: Nominal 24 Vdc (Acceptable range 15 to 30Vdc)
- Power current: 12 mA/channel (excluding output current)
- Dimensions: 3.40 x 2.70 x 0.65 in (87 x 69 x 16 mm)

INSTRUCTIONS

POWER SUPPLY

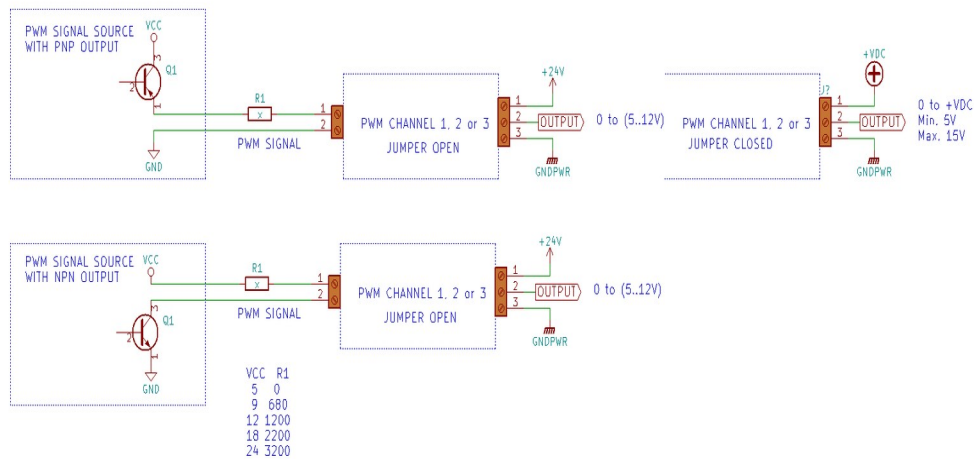
The nominal 10 V output voltage requires a power supply of 15 V minimum.

It is possible to power the board using the “wetting” voltage provided by most commercial VFDs (typically 10V), by limiting the output to 6 V and adjusting the input range accordingly.

EXAMPLE WIRING

The board can be used with both PNP or NPN signals. If the PWM signal is greater than 5V an input series resistor is necessary to limit the input current to 5-10mA.

WIRING EXAMPLES – 5, 9, 12, 16 and 24V LOGIC



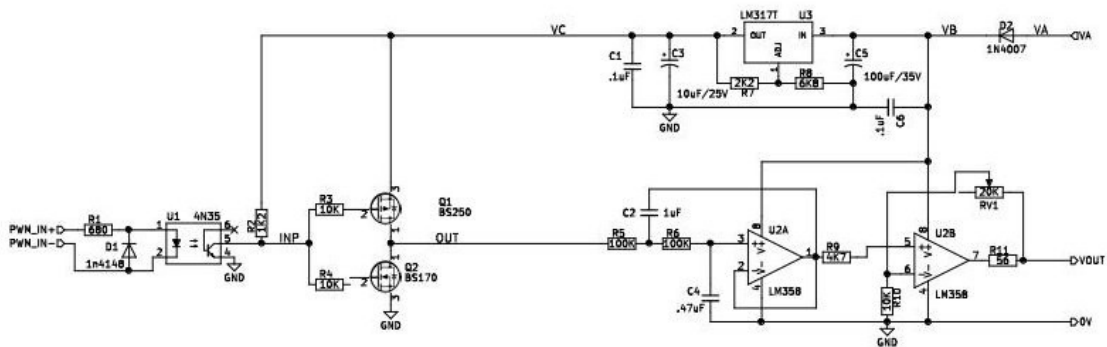
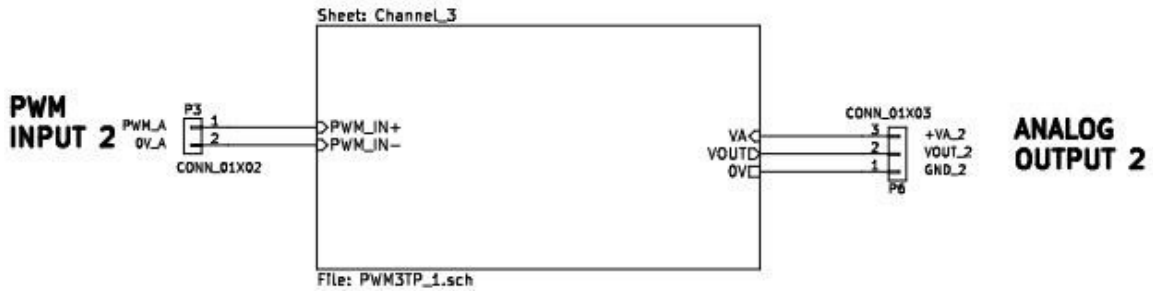
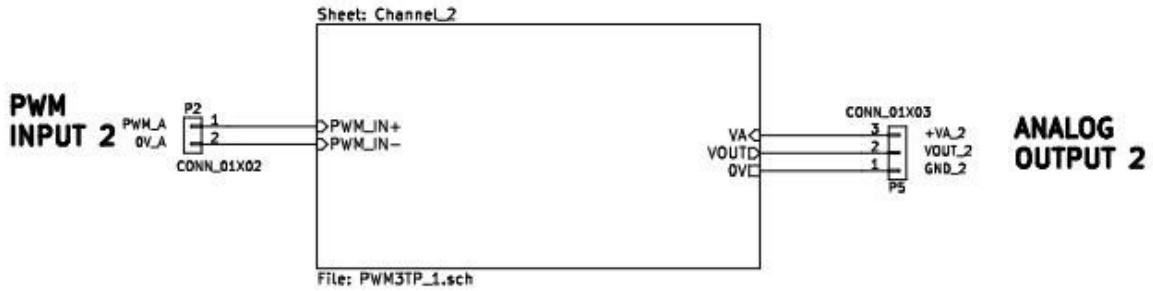
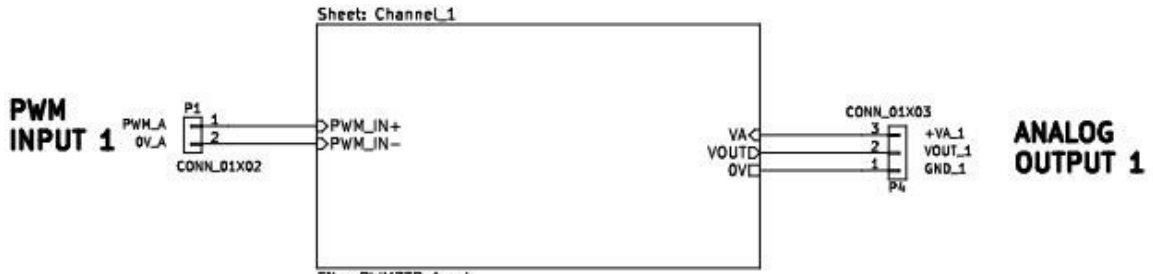
OUTPUT LEVEL ADJUST

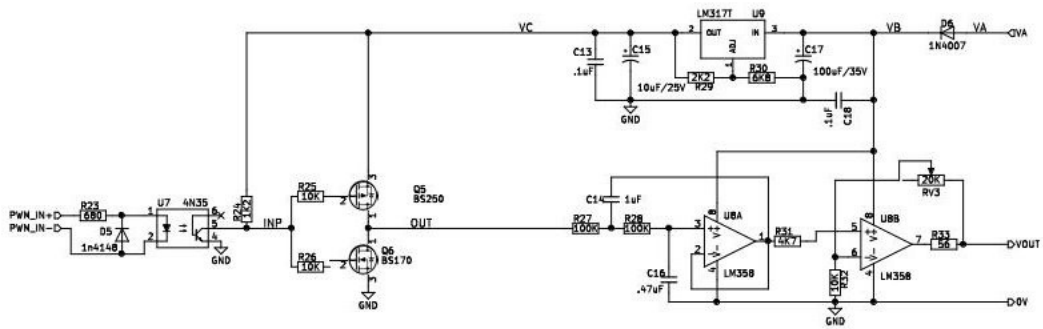
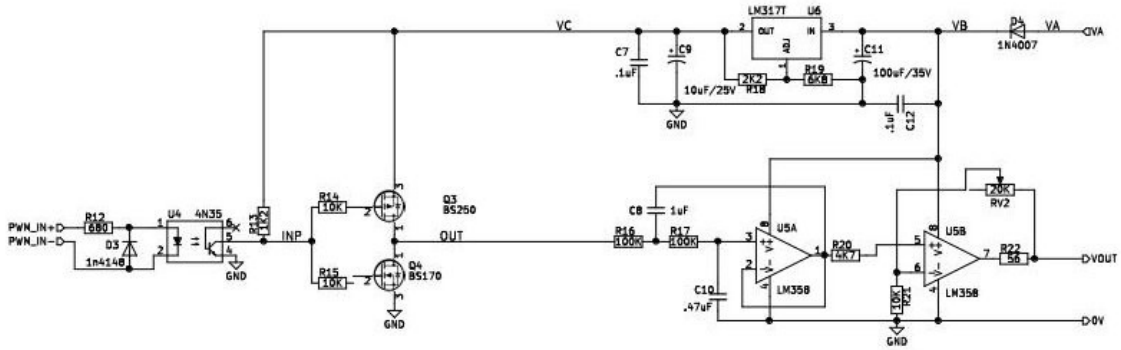
Apply 5V to input (PWM=100%) and adjust trim-pot RV(n) to desired value.
Verify that the output is 0-10mV with the input open (PWM=0%).

NOTE: It is recommended to adjust the output voltage with the board connected to the device in order to compensate for the voltage drop caused by the input resistance.

Open voltage calculation:

$$V_{open} = V_{in} (1 + 1K / R_{inp})$$





PWM3TP - BILL OF MATERIALS

Item	Qty	Reference(s)	Value
1	6	C1, C6, C7, C12, C13, C18	.1uF
2	3	C2, C8, C14	1uF
3	3	C3, C9, C15	10uF/25V
4	3	C4, C10, C16	.47uF
5	3	C5, C11, C17	100uF/35V
6	3	D1, D3, D5	1n4148
7	3	D2, D4, D6	1N4007
8	3	P1, P2, P3	CONN_01X02
9	3	P4, P5, P6	CONN_01X03
10	3	Q1, Q3, Q5	BS250
11	3	Q2, Q4, Q6	BS170
12	3	R1, R12, R23	680r
13	3	R2, R13, R24	1K2
14	9	R3, R4, R10, R14, R15, R21, R25, R26, R32	10K
15	6	R5, R6, R16, R17, R27, R28	100K
16	3	R7, R18, R29	2K2
17	3	R8, R19, R30	6K8
18	3	R9, R20, R31	4K7
19	3	R11, R22, R33	56R
20	3	RV1, RV2, RV3	20K
21	3	U1, U4, U7	4N35
22	3	U2, U5, U8	LM358
23	3	U3, U6, U9	LM317T