LED String

LED String

AC or DC
Power
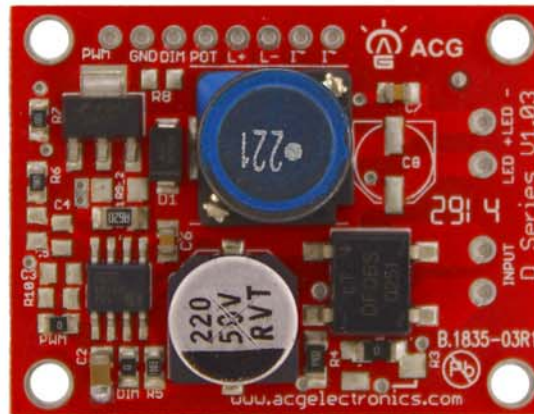Supply

D Series Constant Current LED Driver Module

Runs on both AC and DC input
Suitable for 8-30V AC and 9-40V DC
D1400 only works with DC input

Soft Start
Prevents inrush current to LEDs during the start-up

Dimmable
Suitable for PWM, potentiometer and 0-10V dimming

High Efficiency
Switch mode circuit with up to 91% efficiency

ACG

Voltage vs Current Table

D Series LED driver is a buck type power circuit. The input voltage must be at least a few volts higher than the LED voltage. The output current varies with "number of LEDs connected in series" and "input voltage".

There is no risk in connecting 1 white LED *(LED voltage 3V)* while the input voltage is 40V DC. Driver always works in constant current region. But as the output voltage is getting closer to input voltage, the current decreases up to 20%.

If that variation is unacceptable, please prefer our C-Series constant current LED driver module.

LED amounts and output currents (average) vs input voltage can be seen in the below table.

No of LEDs in series	LED Currents (mA) @12V input D350 / D700 / D1000 / D1400	LED Currents (mA) @24V input D350 / D700 / D1000 / D1400	LED Currents (mA) @36V input D350 / D700 / D1000 / D1400	LED Currents (mA) @40V input D350 / D700 / D1000 / D1400
1 LED	364 / 729 / 1017 / 1353	370 / 727 / 1016 / 1352	370 / 735 / 1023 / 1356	367 / 739 / 1026 / 1363
2 LEDs	340 / 701 / 980 / 1321	353 / 707 / 994 / 1333	353 / 709 / 996 / 1332	357 / 713 / 1001 / 1336
3 LEDs	324 / 689 / 978 / 1296	341 / 696 / 987 / 1322	337 / 689 / 977 / 1313	335 / 671 / 979 / 1311
4 LEDs	-	290 / 636 / 925 / 1253	324 / 678 / 965 / 1302	319 / 672 / 958 / 1296
5 LEDs	-	305 / 608 / 926 / 1213	311 / 669 / 957 / 1289	303 / 655 / 943 / 1274
6 LEDs	-	-	289 / 589 / 860 / 1190	295 / 648 / 933 / 1260
7 LEDs	-	-	237 / 588 / 889 / 1198	287 / 640 / 925 / 1258
8 LEDs	-	-	244 / 564 / 833 / 1132	285 / 546 / 827 / 1150
9 LEDs	-	-	248 / 573 / 873 / 1136	258 / 528 / 807 / 1127
10 LEDs	-	-	242 / 577 / 842 / 1163	223 / 546 / 847 / 1162

LEDs used during tests has the following forward voltages:
Vf = 2.75V @350mA, Vf = 2.83V @700mA, Vf = 2.87V @1000mA, Vf = 2.91V @1400mA

ACG

D Series LED drivers are produced in 4 different output currents:

D350	**D700**	**D1000**	**D1400**
350mA constant current	700mA constant current	1000mA constant current	1400mA constant current
AC/DC input	AC/DC input	AC/DC input	DC input only

Dimensions

42.0 mm

32.0 mm

2.7 mm

3.2 mm

2.7 mm

3.2 mm

Ø3.1 mm
x4 HOLES

10.3 mm

1.6 mm (PCB thickness)

Standard Packaging

Antistatic EPE Foam
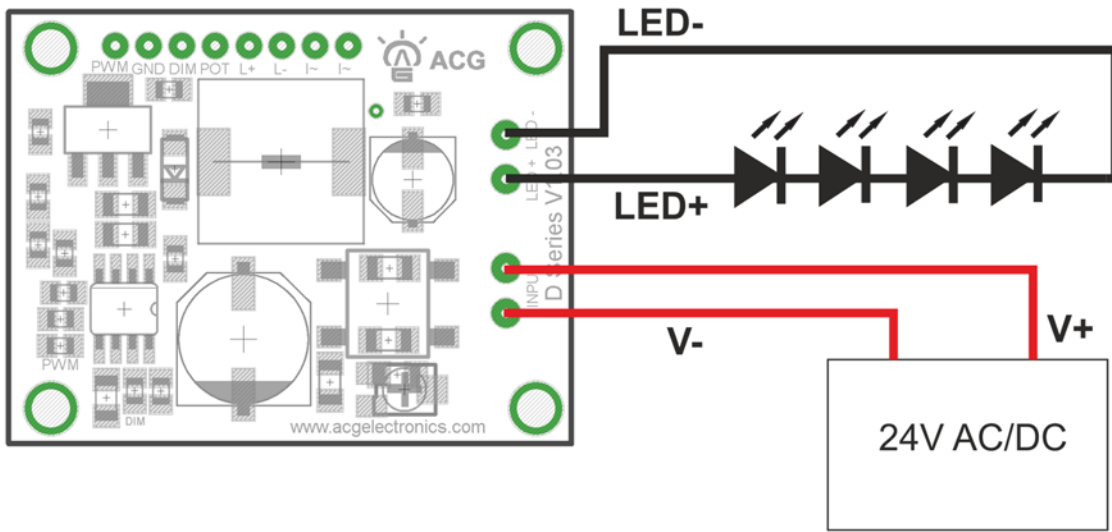
Outer box
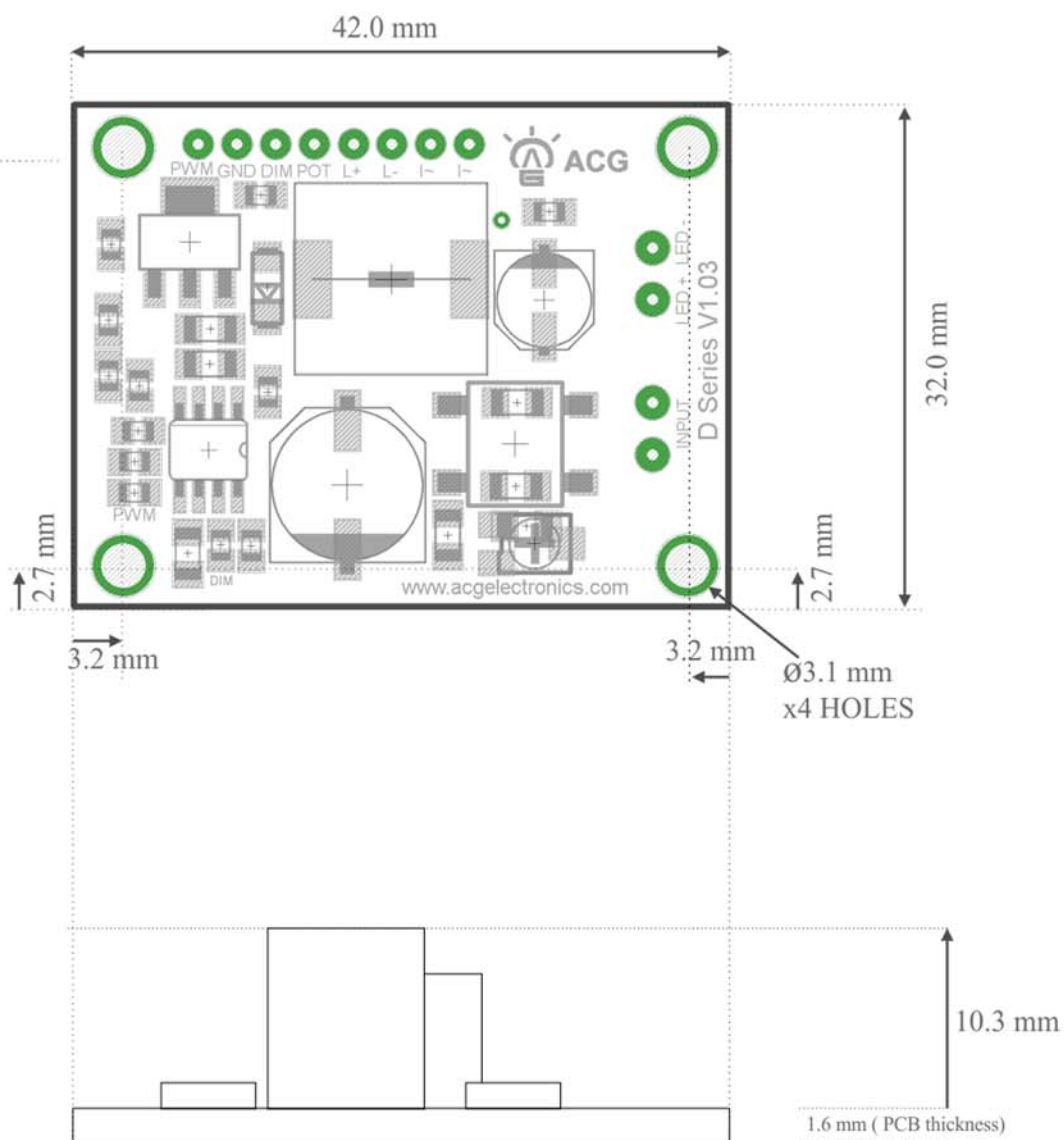
DIMENSIONS: 23cm x 17cm x 5cm
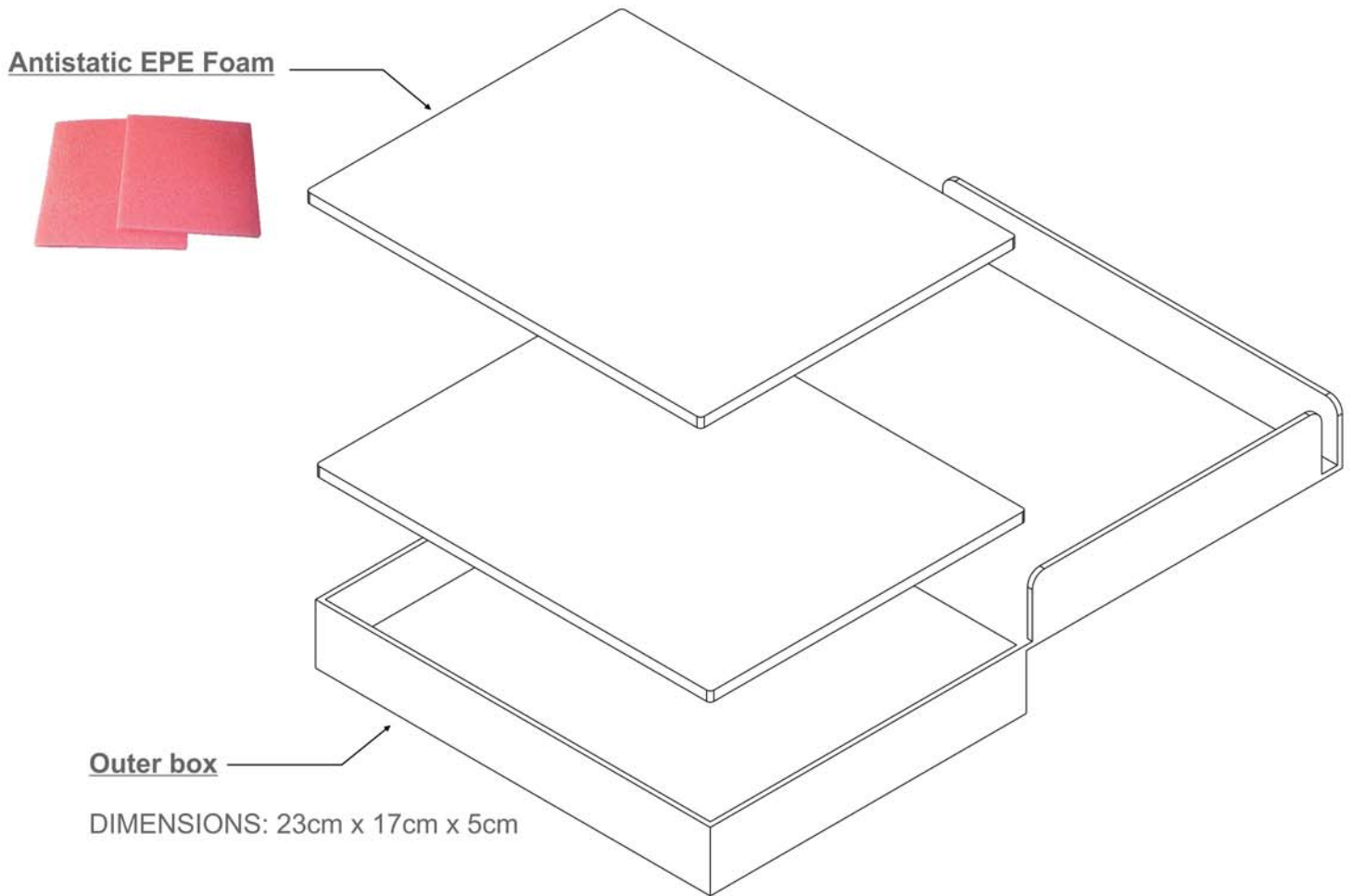
EACH BOX CAN HAVE 50 PCS. D SERIES DRIVERS

Weight and Dimensions

Shipment weight of 50pcs. drivers in original packaging : 0.69 kg

Shipment dimensions of 50pcs. drivers in original packaging : 23cm x 17cm x 5cm

Volumetric weight for express shipment companies : 0.39 kg

ACG

1. Series Connection

i.   Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.
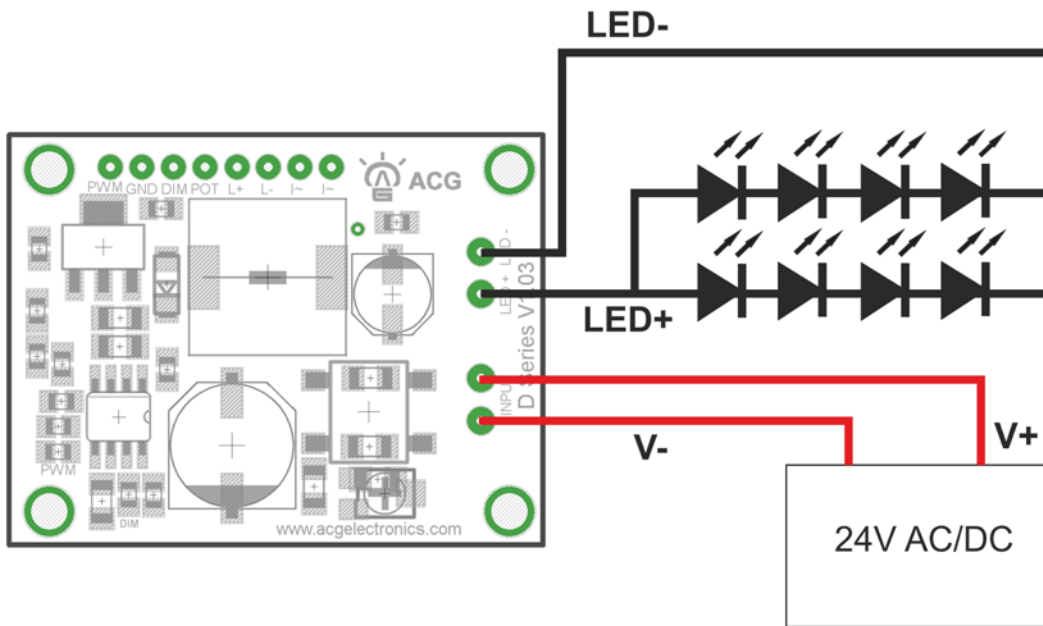(Check the voltage vs current table on page 2)

ii. Connect LED+ and LED -

iii. Connect V+ and V-

iv. D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.

2. Parallel Connection

i.   Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.
(Check the voltage vs current table on page 2)
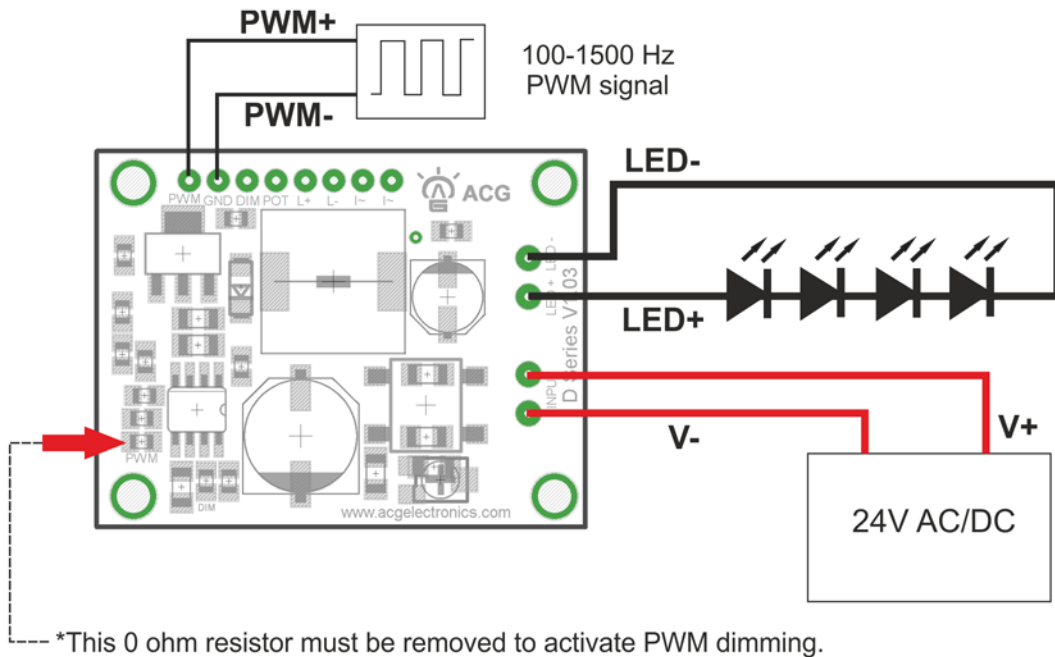
ii. Connect LED+ and LED -

iii. Connect V+ and V-

iv. D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.

IMPORTANT: Parallel connection has certain drawbacks. The voltage at each LED row must be identical. Otherwise the current at each row will be different. If one of the LEDs fail open or short it will also create a current imbalance between rows. "Open LED protector"s or "current mirror" technique can be used carefully to avoid the situation.

For more info on current mirror:
http://ledlight.osram-os.com/wp-content/uploads/2010/05/AppGuideCurrentDistributioninParallelLEDStrings.Web_.pdf

3. PWM Dimming

*This 0 ohm resistor must be removed to activate PWM dimming.

i. Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.
(Check the voltage vs current table on page 2)

ii. Connect LED+ and LED -

iii. Connect V+ and V-

iv. D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.

v. Recommended PWM dimming frequency is 100-1500 Hz.
(One may have good results up to 3 kHz but making trial is highly recommended.)

vi. Normally the D Series LED drivers are PWM disabled. In order to enable it a single 0 ohm resistor must be removed as shown in the schematic.

vii.PWM voltage: 2.3V - 5.0V. Any voltage higher than 5.0V needs a voltage divider to reduce the voltage applied to PWM pin. If flicker is observed during PWM dimming, a simple RC low pass filter can be added to the PWM input.

4. Potentiometer Dimming
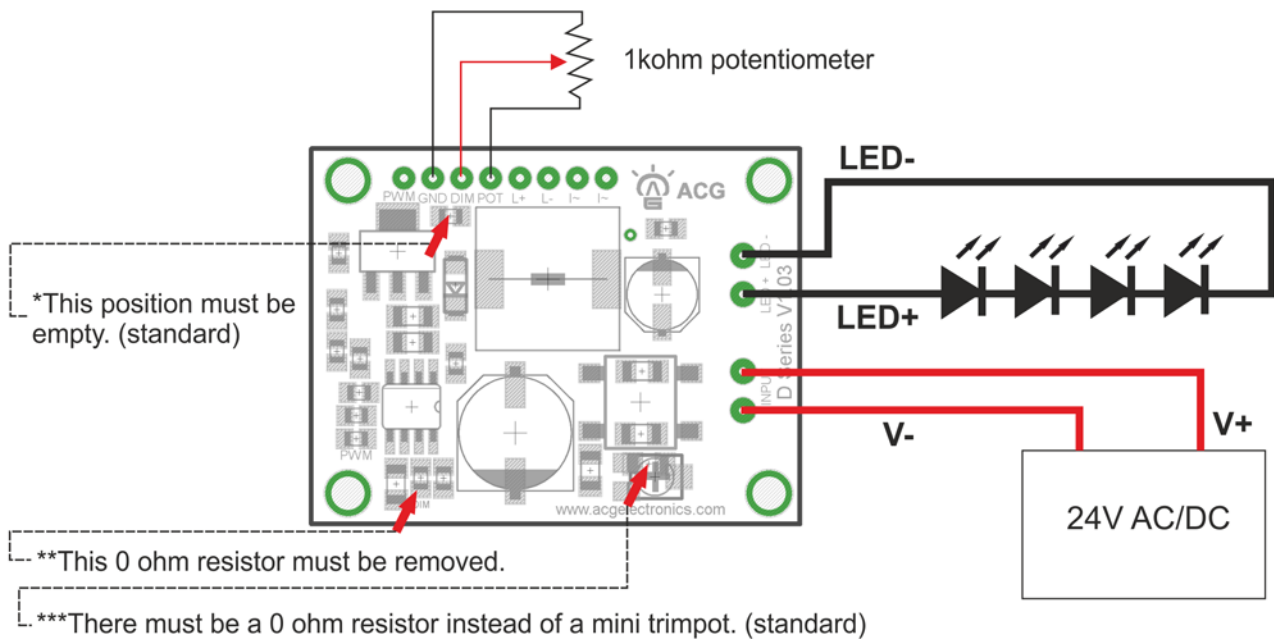
i.   Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.
(Check the voltage vs current table on page 2)

ii. Connect LED+, LED - and potentiometer
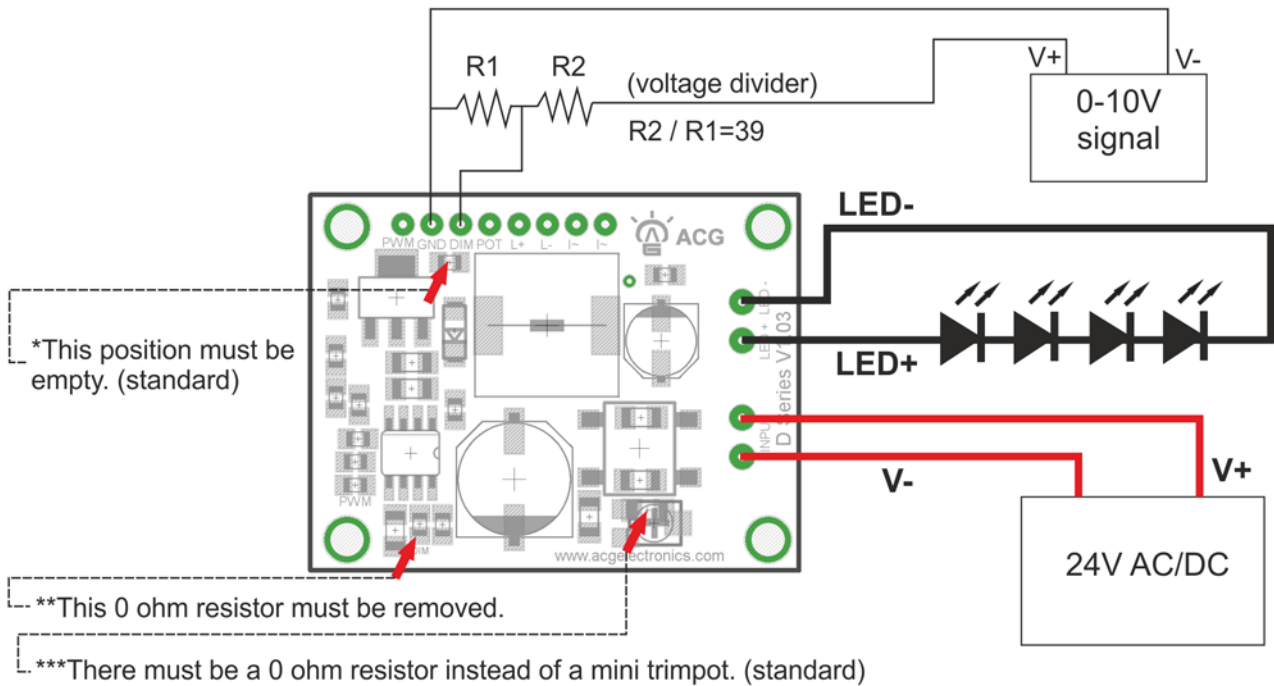
iii. Connect V+ and V-

iv. D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.

v.   Normally the D Series LED drivers are DIM disabled. In order to enable it a single 0 ohm resistor must be removed as shown in the schematic. Other two requirements are already present on a standard driver.

IMPORTANT: Pay attention to the potentiometer connections. If the potentiometer works in the opposite direction of your choice, swap the black potentiometer connections.

IMPORTANT: LEDs can not be dimmed down to 0% with the potentiometer. The dimming range is typically 5% - 100% .

5. 0-10V Dimming

i. **Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.**
(Check the voltage vs current table on page 2)

ii. **Connect LED+, LED - and 0-10V signal**
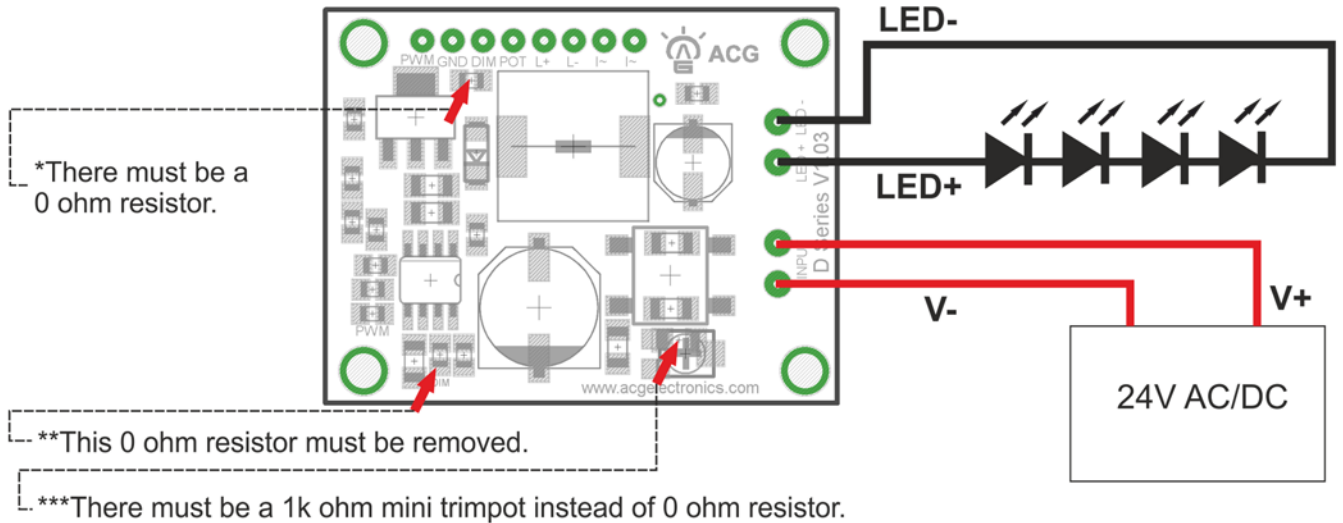
iii. **Connect V+ and V-**

iv. **D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.**

v. **Normally the D Series LED drivers are DIM disabled. In order to enable it a single 0 ohm resistor must be removed as shown in the schematic. Other two requirements are already present on a standard driver.**

IMPORTANT: **An external resistor voltage divider is needed for 0-10V dimming as shown in the schematic.**

IMPORTANT: **LEDs can not be dimmed down to 0% with 0-10V signal. The dimming range is typically 5% - 100% .**

6. On-board Trimpot

i.   Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.
(Check the voltage vs current table on page 2)

ii. Normally the D Series LED drivers are DIM disabled. In order to enable on-board trimpot two 0 ohm resistors must be removed, a 0 ohm jumper and trimpot must be soldered then.
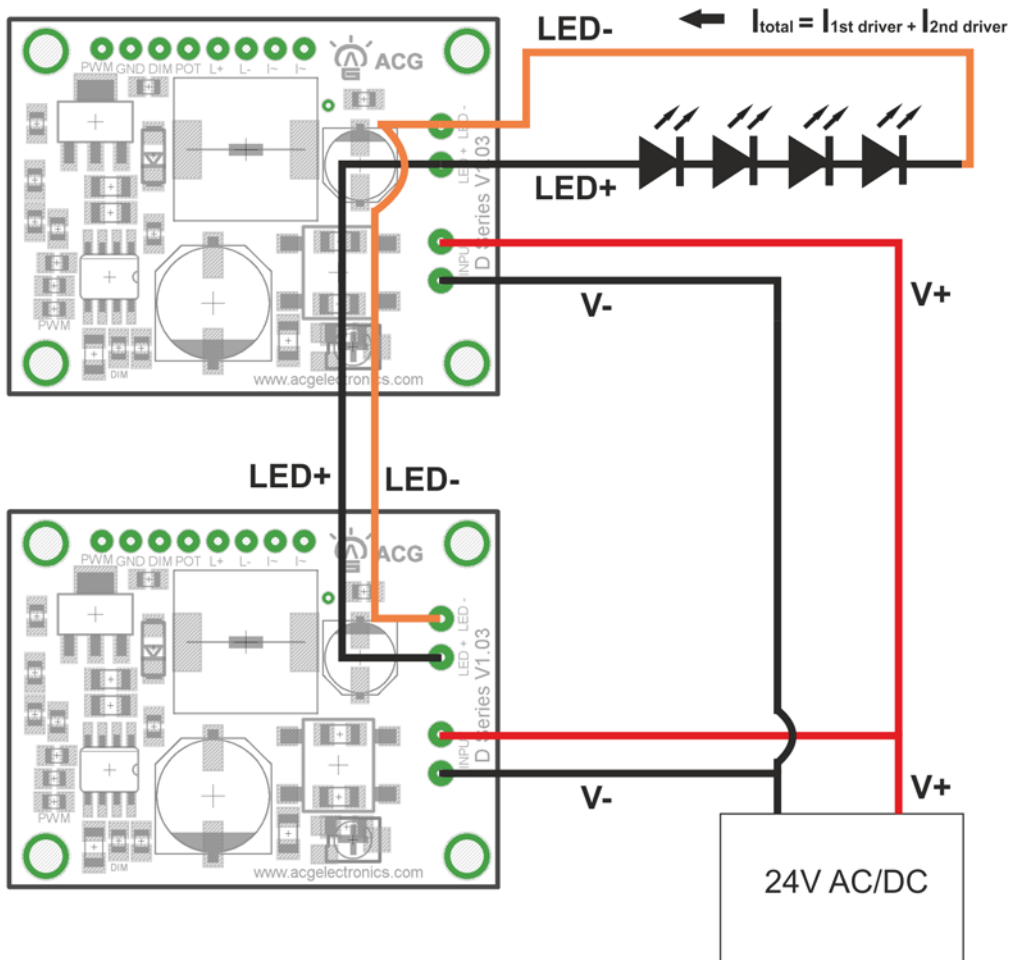
iii. Connect LED+, LED -

iv. Connect V+ and V-

v.   D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.

IMPORTANT: LEDs can not be dimmed down to 0% with the potentiometer. The dimming range is typically 5% - 100% .

7. Connecting Multiple LED Drivers in Parallel

i. Input voltage must be selected according to the number of LEDs connected in series. Input voltage must be higher than LED voltage. It must be taken into account that if the input voltage is close to the output voltage, the LED current will be slightly less than expected.
(Check the voltage vs current table on page 2)

ii. Connect LED+ and LED - of both drivers.

iii. Connect V+ and V- of both drivers.

iv. D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.

v. This type of connection is intended for achieving higher currents like 2000mA or 2800mA. The output currents of 2 drivers will be added.

8. Using the Connector Input / Output
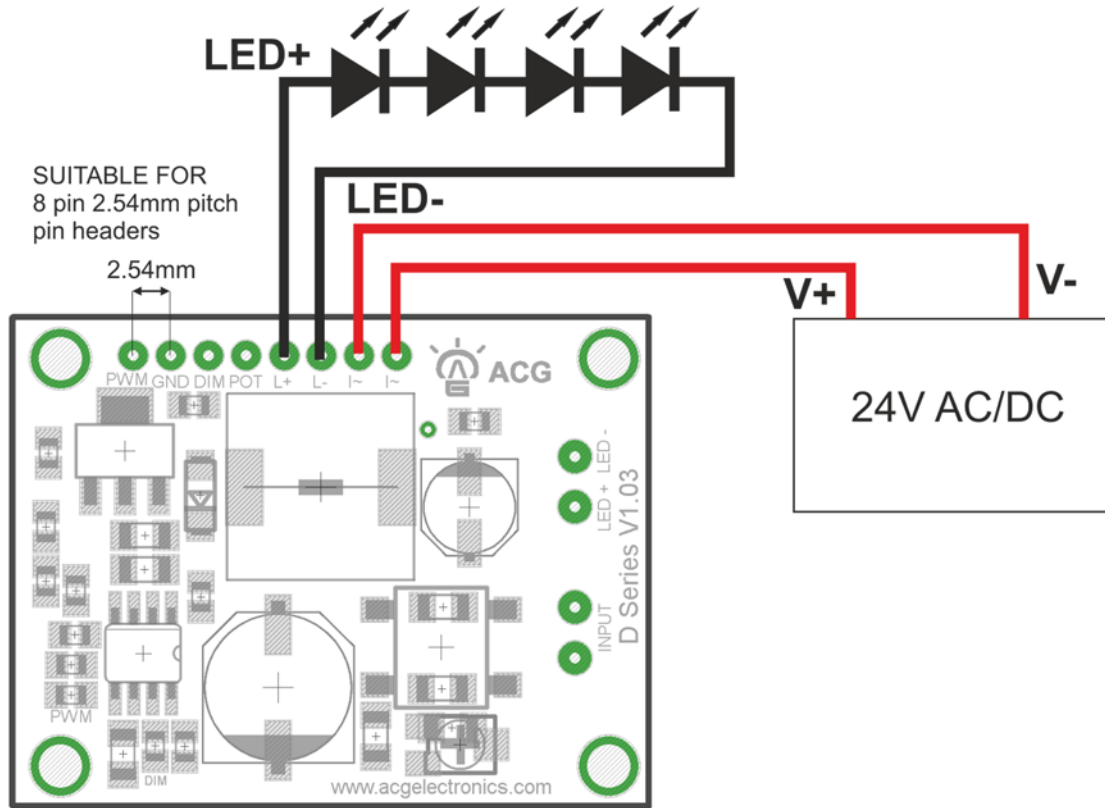
i. There are V+, V-, LED+, LED- connections both on the right hand side and on the top of the above schematic. The top side connections have a 2.54mm pitch and suitable for pin header mounting. D Series LED driver module can be easily integrated to a masterboard via those pads.

ii. Connect LED+ and LED -

iii. Connect V+ and V-

iv. D350, D700 and D1000 LED drivers have reverse polarity protection at the inlet. So (+) and (-) inputs can be connected in any order. If the D1400 driver will be used note that it is not suitable for AC input. In that case make sure V+ and V- connections are made in the correct order.
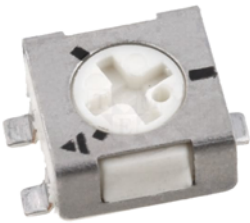
Accessories

SC-235
A400.1000.61.11

Screw terminal block, 2 position, 3.5mm pitch
Green, PA66

For V+, V- input and LED+, LED- output of D Series LED drivers.
2 pcs. needed for each board.

POT-1K
A400.1000.61.12

1kohm smd mini potentiometer for accurate current adjustment
of D Series LED drivers.