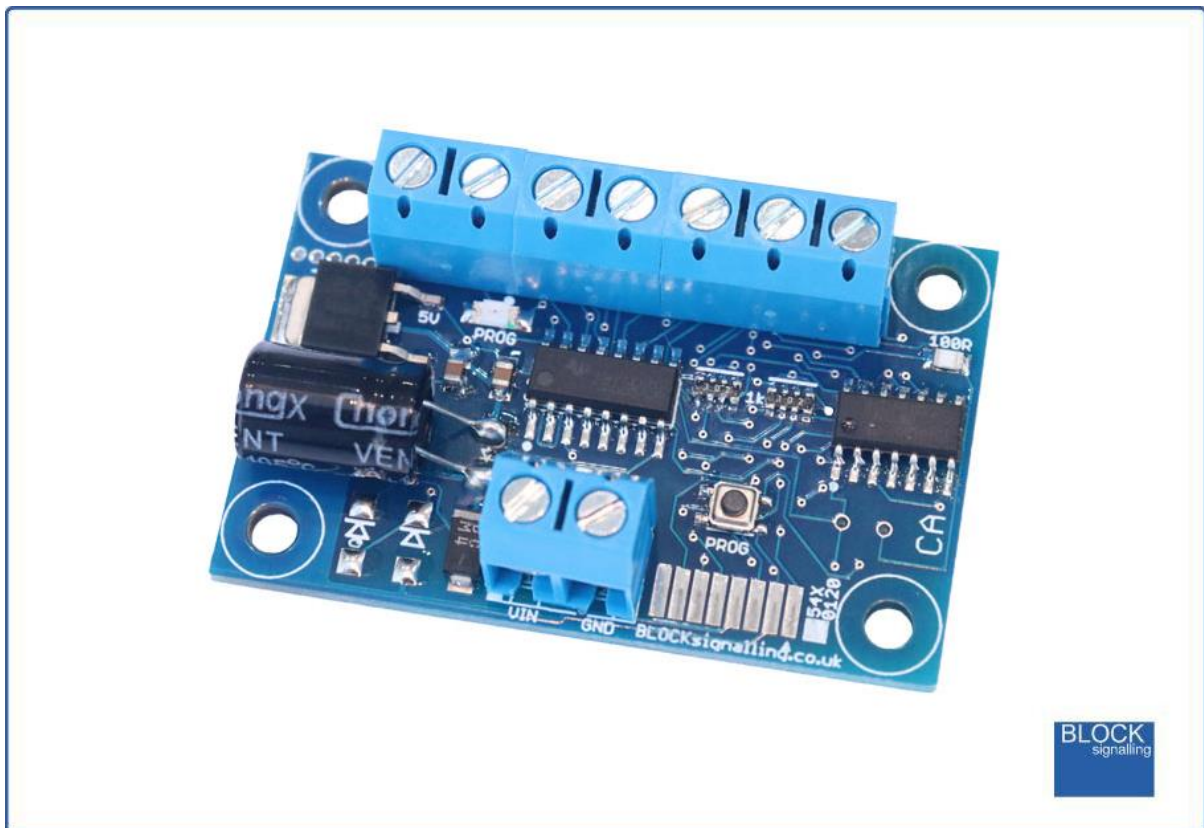# TRAFFIC LIGHTS CONTROLLER WITH FADING (COMMON-ANODE) TLC2A

The BLOCKsignalling TLC2A Traffic Light Controller has been designed for railway modellers to make it very quick and easy to add traffic light signals to their layouts.

- Easy to wire and operate
- Realistic operation with fading between aspects to simulate filament lamps
- UK and Continental switching sequences catered for
- Built-in presets to get you up and running immediately
- No external resistors required as they are built in to the module
- Timings and other settings can be adjusted if required
- For Common-Anode led signals
- Requires a 12V DC Power Supply

To simplify wiring, resistors are built-in, so it is not necessary to connect in or solder additional resistors to the traffic lights (any already installed can remain, but the leds may illuminate slightly dimmer).

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The module is pre-programmed to replicate the standard UK sequence, but it is a simple matter to change this to follow a continental sequence to suit the model if required.

This model (TLC2A) is designed for traffic lights which have a common-anode connection, the positive (anodes) of each of the leds are connected together at each light. If you have traffic lights with common-cathode connections where the negative (cathodes) of the leds are wired together, then the complimentary BLOCKsignalling TLC1A should be used.

Sequences

The recommended UK sequence is shown below. The duration of each phase can be easily adjusted during the programming to suit (see later).
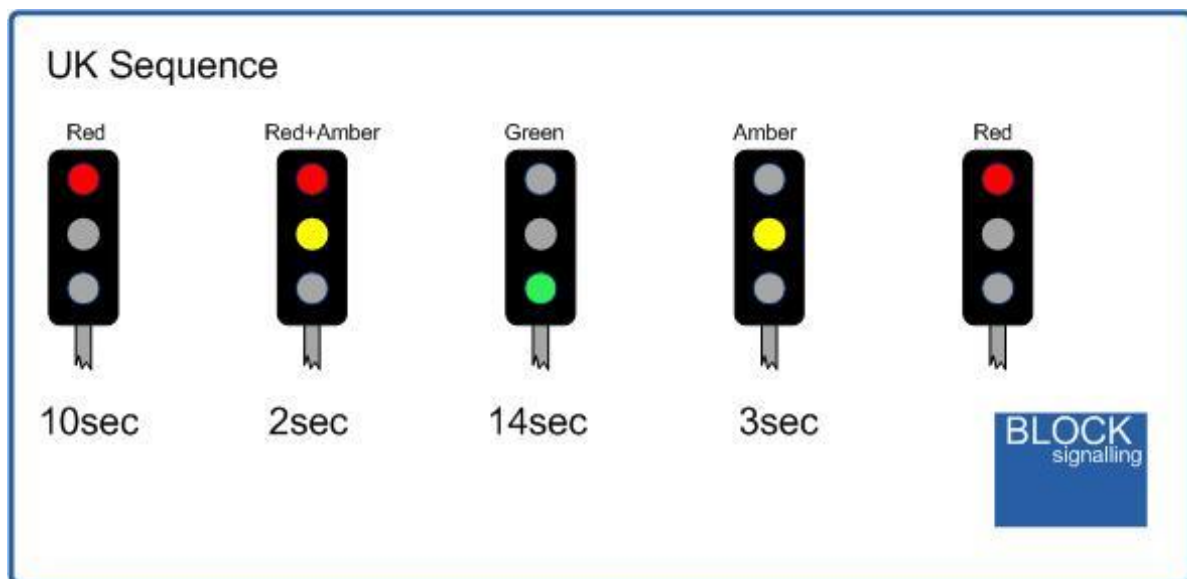
If you re-program the module to replicate the continental sequence, then the following timings are recommended:

Continental Sequence

Red — 10sec
Green — 14sec
Amber — 3sec
Red
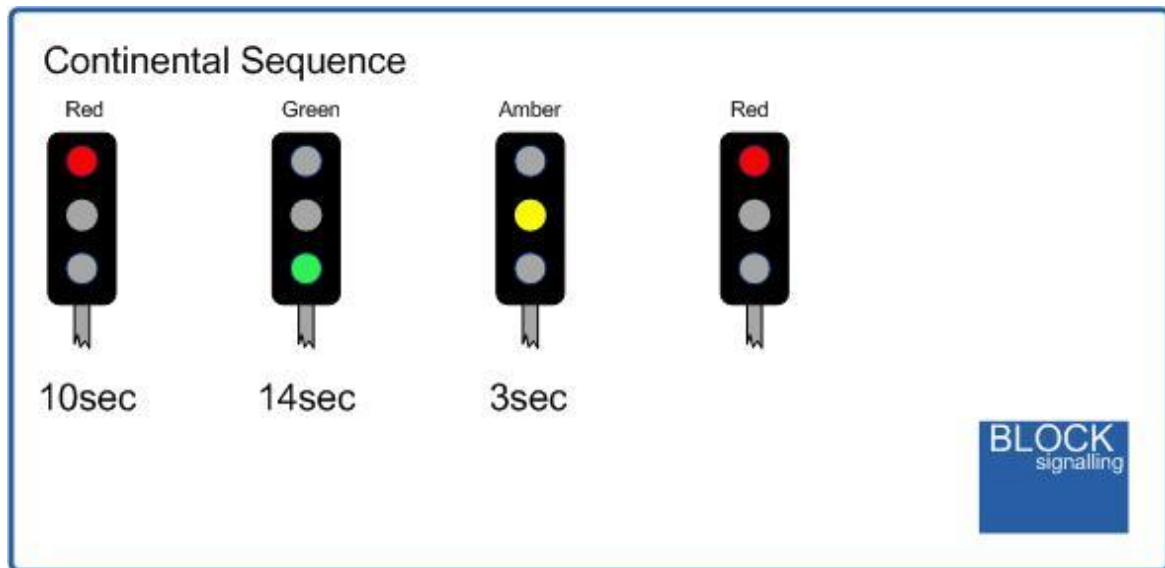
Fading

We have spent many hours testing and adjusting settings to produce a fully realistic representation of how traffic lights (used to) operate.

Modern traffic lights almost exclusively use led technology, and so instantly switch between each colour. Up until about 10 years ago, filament lamps were used, and these turn-on and turn-off over a short time. The software in the BLOCKsignalling traffic light controllers provides a similar action when model led lights are connected. We have made the timings of the dimming adjustable if you wish to vary the settings, or you can turn the dimming off if you wish.

BLOCKsignalling Signal Controllers incorporating Adjustable Fading between Phases
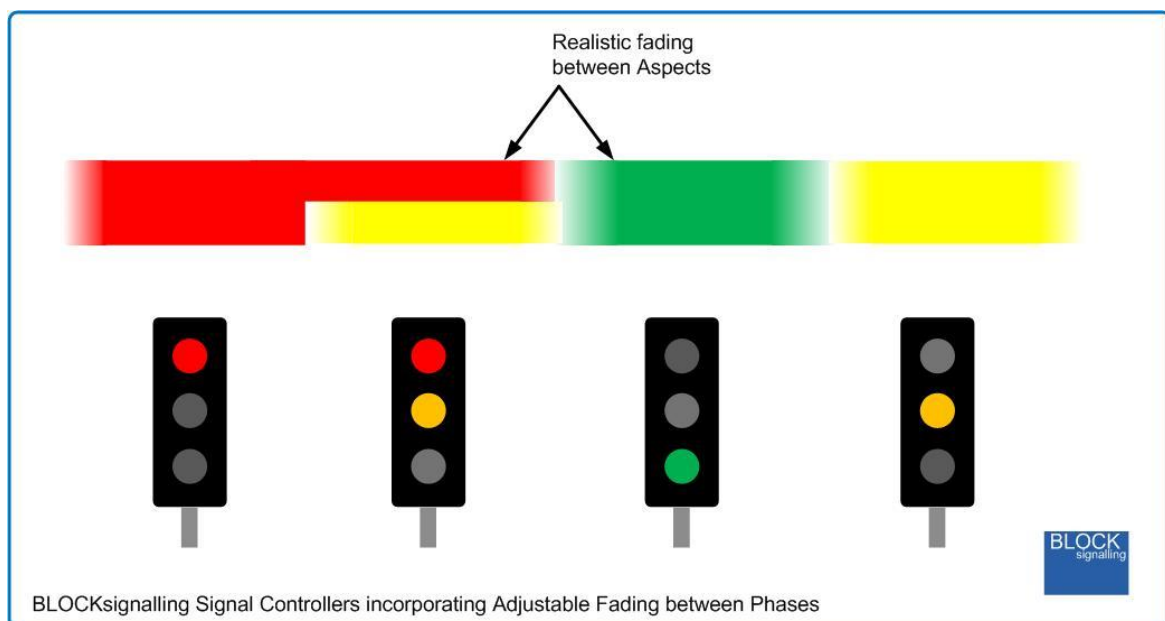
Power Supply

The controller is designed for use with a 12V DC plug-top type power supply.

The current consumption is 0.05A (50mA), and a power supply rated at 0.1A to 0.5A is recommended.

The module will also run for long periods on a 9V battery.

If connected to auxiliary terminals on the back of a train controller the module may operate unpredictably. These outputs are often unsuitable as they are designated as a fairly basic power outputs for accessories such as points motors and may not be smooth or stable.

Please check the wiring carefully before turning on the power to prevent damage to the module.

Programming Procedure

A number of settings can be changed by programming the module.

Programming is performed by holding down the Push Button when switching on the power. The full programming procedure is shown later.
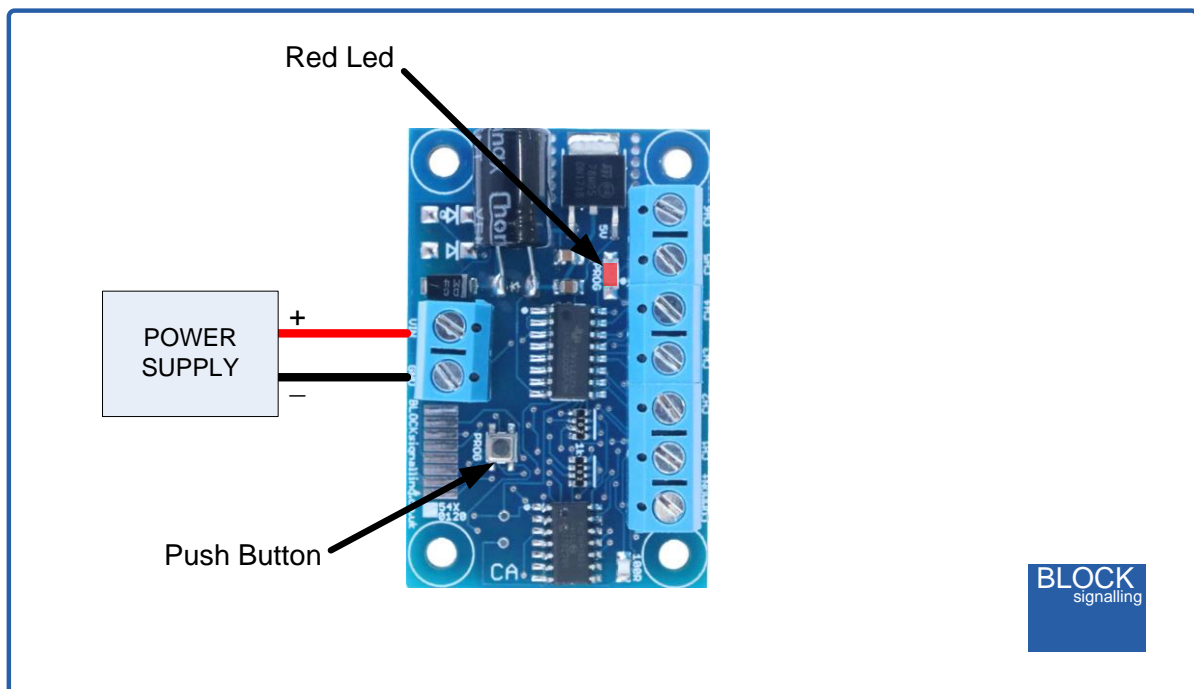
Led Connection

If you are wiring your own leds, then use the following information.

If you are using ready built traffic lights, then the TLC2A is designed to be connected to those with a common-anode connection and there are wiring diagrams for these further on.

When using leds it is important to connect them the correct way around to avoid damage to the leds.

The negative lead (cathode) is identified by a flat on the side of the led body, and by having a shorter lead.

There is no need to wire resistors in circuit, as these are included on the module. Any already wired can remain if you wish.
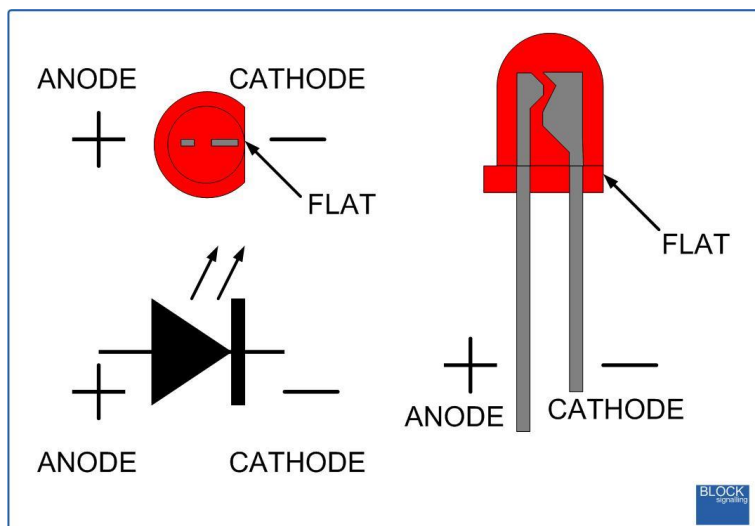
Connecting the Module

The diagram below shows the connection to the individual traffic lights.

Note: Ready-built traffic lights often use a black wire for the common positive connection.

BLOCKsignalling Traffic Light Module with Fading (TLC2A)

POWER SUPPLY

RED
YELLOW
GREEN
RED
YELLOW
GREEN
BLACK
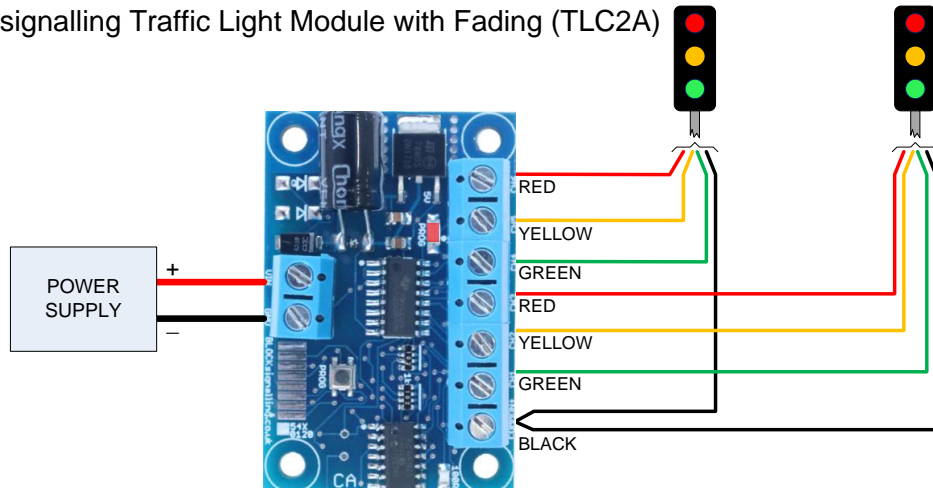
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BLOCKsignalling Traffic Light Module with Fading (TLC2A)

POWER SUPPLY

RED
YELLOW
GREEN
RED
YELLOW
GREEN
BLACK
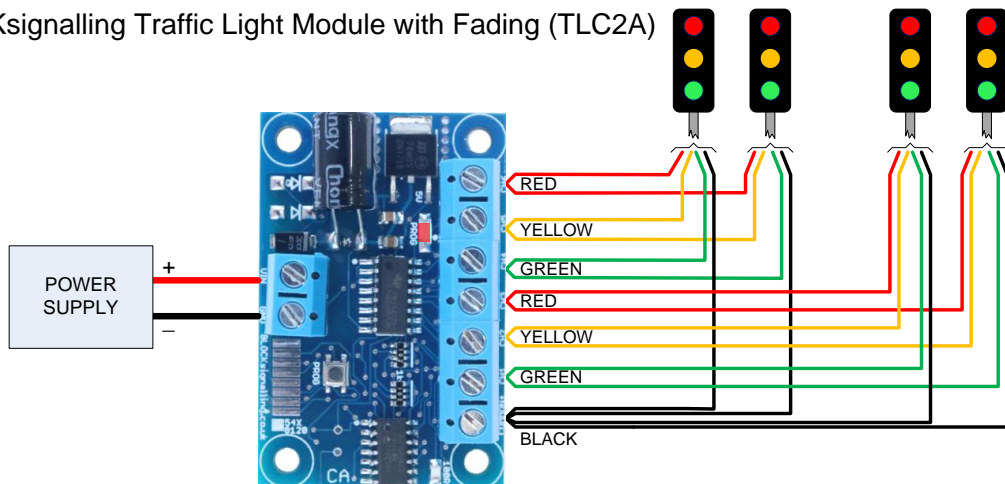
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Selecting UK Mode

This is the default mode when the module is supplied.

To select this program, program memory 1 to a value of 2.

Selecting Continental Mode

To select this program, program memory 1 to a value of 3.

Timing Presets

This module has a number of preset built-in, to allow you to quickly customise the timings to suit.

The default UK mode has very short timings to allow you to quickly see if your traffic lights are operating correctly.

Mode 2 – Default UK mode as supplied
        red 2s, red & amber 2s, green 2s, amber 2s

Mode 3 – Continental mode
        red 2s, green 2s, amber 2s

Mode 4 – UK Short to simulate filament lamps with the following timings:
        red 10s, red & amber 2s, green 14s, amber 3s.

Mode 5 – Continental Short to simulate filament lamps with the following timings:
        red 10s, green 14s, amber 3s.

Mode 6 – UK Long to simulate led lamps with the following timings:
        red 10s, red & amber 2s, green 14s, amber 3s.

Mode 7 – Continental Long to simulate led lamps with the following timings:
        red 10s, green 14s, amber 3s.

To select a particular mode, program memory 2 to the number of the mode you want, ie for Mode 4, program memory 2 to a value of 4.

Other Settings

Please see the programming diagram below if you wish to adjust individual timings or set the brightness of the lamps.

Program Flow Diagram

As mentioned above, there are a number of **memory locations** which can programmed with different **values** to change the operation of the module.

Before starting, it is a good idea to write down the memory locations and the values you are going to set them to.

Programming is performed by holding down the Push Button when switching on the power. The red led on the PCB flashes at 1 second intervals.

When the required number of flashes is seen for the **memory** you want to change, the button is released to select the memory. At this point the led comes on for five seconds to confirm.

The led then starts flashing again, and this time the button needs to be pressed to store the **value** you want the memory to be set to.

After pressing the button, the led flashes 10 times rapidly, and the module starts operating.

Repeat the process for the any other changes you want to make.

If you make a mistake selecting the memory location or setting the value, you may want to perform a factory reset to return the module to its default settings.

Following the diagram is a detailed explanation of all the settings.

Factory Reset

Resetting back to factory settings will allow the module to restart with known settings and is useful if there may have been a mistake made in programming.

To reset the module back to factory settings, switch off the power to the module and hold down the Push Button. Apply the power and continue holding the push button until **1 flash** of the led is seen. At this point, release the button. You will see a long flash of five seconds.

The led will begin flashing again. When you have seen **1 flash**, press the button. You will see a long flash of five seconds and then 10 rapid flashes.

The reset procedure is then complete and the module will restart with factory settings.

If you make a mistake programming, simply repeat the process.

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APPLY POWER

1=SELECT FACTORY RESET → 1=PERFORM RESET

2=SELECT MODE
- 1=LAMP TEST
- 2=UK MODE
- 3=CONTINENTAL MODE
- 4=UK MODE (FILAMENT LAMP SIMULATION) RED TIME 10sec GREEN TIME 14sec
- 5=CONTINENTAL MODE (FILAMENT LAMP SIMULATION) RED TIME 10sec GREEN TIME 14sec
- 6=UK MODE (LED LAMP SIMULATION) RED TIME 10sec GREEN TIME 14sec
- 7=CONTINENTAL MODE (LED LAMP SIMULATION) RED TIME 10sec GREEN TIME 14sec

3=SET RED TIME → SET NUMBER OF SECONDS DEFAULT=2

4=SET RED & AMBER TIME → SET NUMBER OF SECONDS DEFAULT=2

5=SET GREEN TIME → SET NUMBER OF SECONDS DEFAULT=2

6=SET AMBER TIME → SET NUMBER OF SECONDS DEFAULT=2

7=SET LAMP DIMING RATE → 1=SLOW 9=FAST DEFAULT=2

8=SET LAMP BRIGHTENING RATE → 1=SLOW 9=FAST DEFAULT=2

10=SET MAX RED LED BRIGHTNESS → SET MAXIMUM BRIGHNESS 1=DIM 7=BRIGHT DEFAULT=7

11=SET MAX AMBER LED BRIGHTNESS → SET MAXIMUM BRIGHNESS 1=DIM 7=BRIGHT DEFAULT=7

12=SET MAX GREEN LED BRIGHTNESS → SET MAXIMUM BRIGHNESS 1=DIM 7=BRIGHT DEFAULT=7

25=READ SOFTWARE VERSION → DISPLAYS SOFTWARE VERSION BY FLASHING PCB LED

PROGRAMMING DIAGRAM
TLC1A AND TLC2A CONTROLLERS

BLOCK signalling

Frequently Asked Questions

Q. Can I connect relays to the outputs ?

A. The outputs only supply very low power, which is insufficient to power relays.

Q. Can I connect bulbs to the outputs ?

A. The outputs only supply very low power, which is insufficient to power bulbs.