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10's second count down traffic light control apparatus for
traffic junction

Background to the Invention

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Conventional traffic lights control apparatus do not allow motorists to tell when the amber light is going to turn to red. Hence, motorists are not sure whether to proceed or stop their vehicles when the traffic light is showing amber. In some cases, stopping prematurely causes collision from behind. In other cases, if a motorist drives past the junction, he or she may commit a traffic offence for driving past a red traffic light.

15 Summary of the Invention

Accordingly, the invention provides a traffic light having:

20 a rectangular array of tri-coloured light emitting diodes (LEDs), wherein the traffic light is configured so that before the traffic light turns from green to red a portion of the array of LEDs is switched from green to off to thereby indicate to motorists that the traffic light is about to turn red.

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In a preferred embodiment this traffic light embeds the 3 lights (i.e. green, amber and red and in some cases with green or red arrow) within a single opening which comes in a rectangle shape. The traffic light
30 departs from the usual traffic light which are round shape with 3 separate light units.

Brief Description of the Drawings

35 A preferred embodiment of the invention will now be described in relation to the accompanying drawings in which:



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Figure 1 illustrates a traffic light sequence of a first example;

Figure 2 shows a traffic light sequence of a second example;

5 Figure 3 shows a traffic light sequence of a third example;

Figure 4 shows a traffic light sequence of a fourth example;

10 Figure 5 shows a traffic light sequence of a fifth example;

Figure 6 illustrates two possible traffic light orientations; and

Figure 7 illustrates a traffic light sequence of a sixth example.

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Description of the Preferred Embodiment

The traffic light of the preferred embodiment can be placed horizontally or vertically as shown in Figure 6.

20 The traffic light uses Light Emitting Diodes (LEDs). The front panel of each traffic light has ten blocks of LEDs. In the preferred embodiment when the traffic light begins changes from green to red, a block of LEDs is switched off. This followed by further blocks, until the 7th block

25 when the remaining green portions of the light are changed to amber. The aforesaid gives advance warning to motorists in order to allow them to take (depending on their speed and distance) appropriate steps. The amber light continues to switch off with the 8th, 9th and finally

30 to the 10th block switching off in turn until where the front panel of LEDs is completely blank for a second until it switches to red light. In the preferred embodiment, the blocks are switched every second so that the traffic light provides a ten second countdown as the traffic light

35 turns to red.

The invention can also be applied to lights which

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incorporate turning arrows. A traffic light with a green arrow which allows motorists to turn, operates quite similar to the above except that when the traffic light turns red, the green arrow will appear and it will blink for a while before the whole panel turns red. A traffic light with a blinking red arrow allowing motorists to turn when the traffic light is red, operates in the same manner as aforesaid.

Various possible traffic lights made in accordance with the preferred embodiment are illustrated in the following examples.

Example 1

An exemplary traffic signal sequence is shown in Figure 1 where the sequence is as follows:

Figure 1a The screen of the traffic light is covered with green;
Figure 1b Traffic light begins to change from green to red by first switching off the 1st block of LED;
Figure 1c The next second, the 2nd block is switched off;
Figure 1d The 3rd second with the 3rd block being switched off;
Figure 1e On the 4th second, the 4th block is switched off;
Figure 1f The 5th block is switched off at the 5th second;
Figure 1g Followed by the 6th block at the 6th second;
Figure 1h When reaching the 7th second, the remaining lighted green changed to amber.
Figure 1i The switching off of the 8th block in amber light continues at the 8th second;
Figure 1j The 9th block is switched off at the 9th second;

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Figure 1k Now the screen is completely blank;
11 Red light is on the whole screen.

Example 2

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Example 2 shows the incorporation of a green arrow 1 into the traffic light. In this case, the sequence is as follows:

- Figure 2a The screen of the new apparatus of a
10 traffic light control is covered with green;
Figure 2b Traffic light begins to change from green
to red with green arrow by first switching off 1st block of
LED.
Figure 2c The next second, the 2nd block is switched
15 off;
Figure 2d The 3rd second with the 3rd block being
switched off;
Figure 2e On the 4th second, the 4th block is switched
off;
20 Figure 2f The 5th block is switched off at the 5th
second;
Figure 2g Followed by the 6th block at the 6th second;
Figure 2h When reaching the 7th second, the remaining
lighted green changed to amber.
25 Figure 2i The switching off of the 8th block in amber
light continues at the 8th second;
Figure 2j The 9th block is switched off at the 9th
second;
Figure 2k The screen is completely blank for a
30 second;
Figure 2l Followed by red light is on the whole
screen;
Figure 2m A green arrow allowing the motorist to turn
appears and it will blink when it is about to switch off
35 and turns to red;
Figure 2n Now the screen is covered with red.

Example 3

Example 3 shows the traffic light control with a green arrow allowing motorists to turn. The sequence is as follows:

- Figure 3a The screen of the new apparatus of a traffic light control is green with the last 3 blocks showing a green arrow on the same panel;
- 10 Figure 3b Traffic light begins to change from green to red with green arrow by first switching off 1st block of LED. The green arrow's light remains lit.
- Figure 3c The next second, the 2nd block is switched off. The green arrow's light remains lit;
- 15 Figure 3d The 3rd second with the 3rd block being switched off. The green arrow's light remains lit;
- Figure 3e On the 4th second, the 4th block is switched off. The green arrow's light remains lit;
- Figure 3f The 5th block is switched off at the 5th
- 20 second. The green arrow's light remains lit;
- Figure 3g Followed by the 6th block at 6th second. The green arrow's light remains lit;
- Figure 3h When reaching the 7th second, the green arrow's light changes to amber;
- 25 Figure 3i The switching off of the 8th block in amber light continues at the 8th second;
- Figure 3j The 9th block is switched off at the 9th second;
- Figure 3k The screen is completely blank for a
- 30 second;
- Figure 3l Followed by red light is on the whole screen.

Example 4

35 Example 4 shows the traffic light with red blinking arrow allowing motorists to turn when the traffic light is in red. The sequence is as follows:

Figure 4a The screen of the new apparatus of a
traffic light control is covered with green;
Figure 4b Traffic light begins to change from green
5 to red by first switching off 1st block of LED.
Figure 4c The next second, the 2nd block is switched
off;
Figure 4d The 3rd second with the 3rd block being
switched off;
10 Figure 4e On the 4th second, the 4th block is switched
off;
Figure 4f The 4th block is switched off at the 5th
second;
Figure 4g Followed by the 6th block at the 6th second;
15 Figure 4h When reaching the 7th second, the remaining
lighted green changed to amber.
Figure 4i The switching off of the 8th block in amber
light continues at the 8th second;
Figure 4j The 9th block is switched off at the 9th
20 second;
Figure 4k The screen is completely blank for a
second;
Figure 4l Red light with red blinking arrow are on
the same screen.

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Example 5

Example 5 shows the traffic light control in a
vertical orientation. The switching of the blocks of LED
30 can begin from the bottom or from the top. In the
following sequence, the blocks of LEDs are switched off
from the bottom.

Figure 5a The screen of the new apparatus of a
35 traffic light control is covered with green;
Figure 5b Traffic light begins to change from green
to red by first switching off 1st block of LED.

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- Figure 5c The next second, the 2nd block is switched off;
- Figure 5d The 3rd second with the 3rd block being switched off;
- 5 Figure 5e On the 4th second, the 4th block is switched off;
- Figure 5f The 4th block is switched off at the 5th second;
- Figure 5g Followed by the 6th block at the 6th second;
- 10 Figure 5h When reaching the 7th second, the remaining lighted green changed to amber.
- Figure 5i The switching off of the 8th block in amber light continues at the 8th second;
- Figure 5j The 9th block is switched off at the 9th
- 15 second;
- Figure 5k The screen is completely blank for a second;
- Figure 5l Red light with red blinking arrow are on the same screen.

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Example 6

- Example 6, is illustrated in Figure 7 and is the same in all respects to Example 1 except that a round red
- 25 stop sign is provided within the rectangle at step 71.

CLAIMS:

1. A traffic light having:
 a rectangular array of tri-coloured light
5 emitting diodes (LEDs), wherein the traffic light is
configured so that before the traffic light turns from
green to red a portion of the array of LEDs is switched
from green to off to thereby indicate to motorists that
the traffic light is about to turn red.
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2. A traffic light as claimed in claim 1, wherein a
series of portions of the array of LEDs are switched from
green to off as the light is about to turn red.
- 15 3. A traffic light as claimed in claim 2, wherein
after a predetermined number of portions of the array of
LEDs have been switched to off, the remaining portions of
the array of LEDs are switched to amber.
- 20 4. A traffic light as claimed in claim 1, wherein
the traffic light is in the red mode, all the LEDs are lit
up in red.
- 25 5. A traffic light as claimed in claim 1, wherein a
standard rounds top sign is lit within the rectangular
array when the light is in the red mode.
- 30 6. A traffic light as claimed in claim 3, wherein
before the light turns red a block amounting to 10% of the
LEDs is switched from green to off with further blocks of
10% being shut off at the end of each subsequent second
until 60% of the green LEDs have been shut off, following
which the remaining 30% of the LEDs are switched from
green to amber light.
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7. A traffic light as claimed in claim 6, wherein
further blocks of 10% are shut off at the end of each

second until all the LEDs are off.

8. A traffic light as claimed in claim 7, wherein after the last block of amber LEDs have been switched off, the LEDs are unlit for 1 second before the LEDs will be lit up in red.

9. A traffic light as claimed in claim 4, wherein the traffic light is further configured so that 30% of the end of the red lit LEDs can be made to show a green arrow where necessary.

10. A traffic light as claimed in claim 9, wherein three seconds before the green arrow is shut off the said green arrow will blink at one blink per second.

11. A traffic light as claimed in claim 1, wherein the green light is further configured to show a green arrow with the last 30% of the LEDs, and wherein ten seconds before the red light comes on, the first 10% of the green light will shut off, whereafter, a block of green light will shut off at the end of every subsequent second, after the 6th second has elapsed the green arrow area of LEDs will switch to amber light filling the last 30% block of the housing.

12. A traffic light as claimed in claim 4, wherein when a left turn on red is permitted 30% of the red area on the left edge of the housing will show a flashing red arrow.

13. A traffic light as claimed in claim 1, fixed in a horizontal orientation.

14. A traffic light as claimed in claim 1, fixed in a vertical orientation.

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15. A traffic light substantially as herein described with reference to the accompanying drawings.