HSI

LED String:

Revision History Table:

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Author | Date | Status |
| 1.0 | Caroline Youssef / Mahmoud Gamal | 23/1/2020 | Initial Creation |
| 1.1 | Caroline Youssef / Mahmoud Gamal | 28/1/2020 | Review Changes – under development |
| 1.2 | Caroline Youssef /  Mark Joseph | 5/2/2020 | Header Added- Document Status Table Added |
| 1.3 | Mahmoud Gamal | 6/2/2020 | Changing Block Diagram |
| 1.4 | Mahmoud Gamal | 10/2/2020 | Minor changes |
| 1.5 | Caroline Youssef | 10/2/2020 | Minor Changes |
| 1.6 | Mark Joseph | 15/2/2020 | Adding Pin Usage Column To The Pin Table |

# Current Document State:

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Document Status** | **Author** |
| 23/1/2020 | 1.0 | Draft | Caroline Youssef / Mahmoud Gamal |
| 28/1/2020 | 1.1 | Proposed | Caroline Youssef / Mahmoud Gamal |
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| 10/2/2020 | 1.5 | Proposed | Caroline Youssef |
| 15/2/2020 | 1.6 | Proposed | Mark Joseph |

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# Requirements

Block Diagram

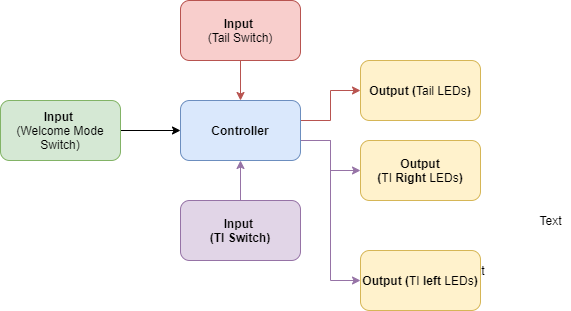


Fig. 1

Pin Layout

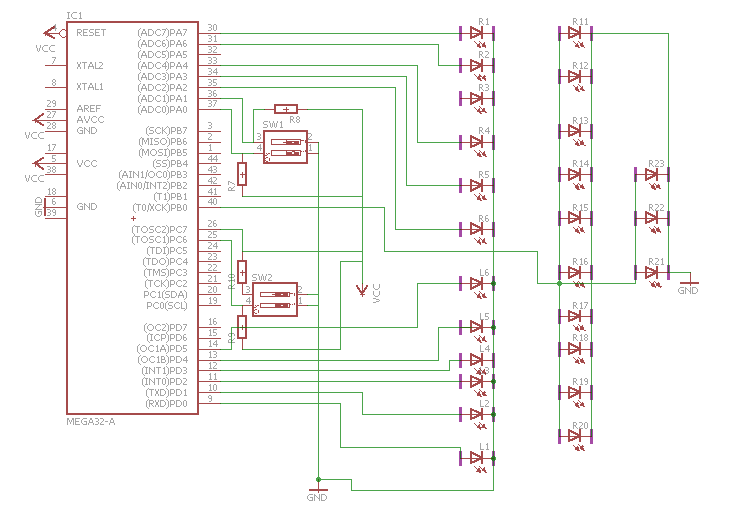


Fig. 2

|  |  |  |
| --- | --- | --- |
| Pin Number | Pin Configuration | Pin Usage |
| 4 | VCC | - |
| 5 | VCC | - |
| 6 | GND | - |
| 9 | OUTPUT | L1 |
| 10 | OUTPUT | L2 |
| 11 | OUTPUT | L3 |
| 12 | OUTPUT | L4 |
| 13 | OUTPUT | L5 |
| 14 | OUTPUT | L6 |
| 25 | INPUT | TI right switch |
| 2 | INPUT | TI left switch |
| 30 | OUTPUT | R1 |
| 31 | OUTPUT | R2 |
| 32 | OUTPUT | R3 |
| 33 | OUTPUT | R4 |
| 34 | OUTPUT | R5 |
| 35 | OUTPUT | R6 |
| 36 | INPUT | MODE switch |
| 37 | INPUT | Tail switch |
| 40 | OUTPUT | Tail Leds |

# Features:

* At launch the LEDs will perform welcome mode.
* Use tail switch to perform tail feature.
* Use TI switch for TI feature.

# Components:

In this project, the following components are going to be used:

* 24 LEDs : used to display certain patterns depend on the input signals to the controller (tail pattern or TI pattern) or independent on the input signals(welcome pattern)
* ATMega32 ( Microcontroller) : it is the advanced version of microprocessors. It contains on chip central processing unit (CPU), Read only memory (ROM), Random access memory (RAM), input/output unit, interrupts controller etc.

Therefore a microcontroller is used for high speed signal processing operation inside an embedded system. It acts as major component used in designing of an embedded system.

* 4 Switches : used as input signals to the microcontroller to select a certain pattern of the LEDs