Starter LED Segment Board Driver User's Guide

Table of Contents

Chapter 1. Overview 1
- **1.1 Overview** 1
- **1.2 Features** 1
- **1.3 Applications** 2
- **1.4 Quick Start** 2

Chapter 2. Hardware Detail 3
- **2.1 Power Supply** 3
- **2.2 RS232 Interface** 3
- **2.3 DIP Switch** 3
- **2.4 Tactile Switch** 4
- **2.5 Signal Output** 4

Chapter 3. Electrical Characteristics 5
Chapter 4. Mechanical Drawing 6
Chapter 5. Appendix 7
Chapter 6. Contact Us 8

NOTES:

Product Version : Ver 1.0

Document Version : Ver 1.0

Chapter 1. Overview

1.1 Overview

Thanks for using this starter LED segment board driver by Sure Electronics. This driver board is designed for 7-segment LED information boards by Sure. It integrates high performance PIC16F690 as the driver which controls all the serial communications and 7-segment display through an easy-to-use API.

FIGURE 1-1 OVERVIEW

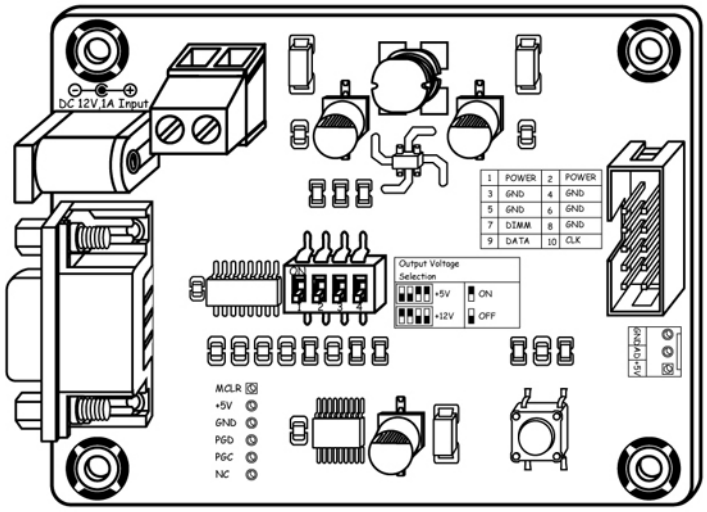
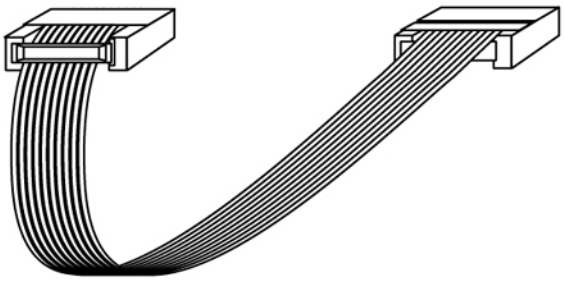


FIGURE 1-2 ACCESSORY



Note: All the diagrams in this manual are for reference only.

1.2 Features

- Power supply via DC input jack or 2-pin terminal block
- Selectable baud rate: 4800bps, 9600bps (default), 19200bps
- Selectable brightness (8 levels) via the on-board tactile switch or commands
- Baud rate values retained in non-volatile memory
- Numerical display control for each digit
- 4-slide DIP switch for voltage selection - 0V, 5V or 12V
- DB-9 female port for communication with PC or other devices with DB9 port

- 10-pin male socket for connection with 7-segment LED info boards
- 3-pin interface reserved to connect an external brightness sensor for auto brightness control

1.3 Applications

- Drive 7-segment LED info boards

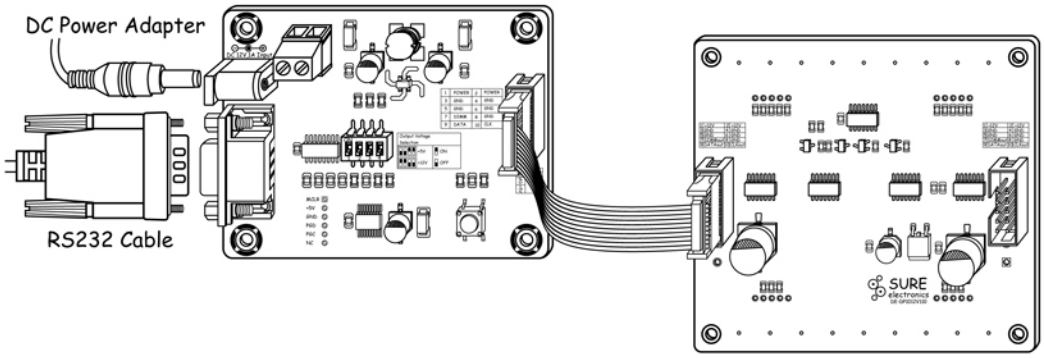
TABLE 1-1 7-SEGMENT LED INFO BOARD SERIES BY SURE

Product No.	Product Name
DE-DP21911	4" 1 digit 7-segment Red Display Board
DE-DP21011	7" 1 digit 7-segment Red Display Board
DE-DP22511	1.2" 2 digit 7-segment Red Display Board
DE-DP22611	1.5" 2 digit 7-segment Red Display Board
DE-DP22711	1.8" 2 digit 7-segment Red Display Board
DE-DP22811	2.3" 2 digit 7-segment Red Display Board
DE-DP22911	4" 2 digit 7-segment Red Display Board

1.4 Quick Start

1. Connect the driver board and a 7-segment information board with an IDC cable.
2. Connect the driver board and PC with an RS232 cable
3. Power the driver board. If you can read some start-up information on PC, the connection is successful.

FIGURE 1-3 CONNECTION SCHEMATIC



Chapter 2. Hardware Detail

2.1 Power Supply

This board can be powered via DC input jack or 2-pin terminal block.

TABLE 2-1 TERMINAL BLOCK

Pin	Mark	Description
1	+12V	Positive of DC12V Input
2	GND	Negative of DC12V Input

Note: Never use DC input jack and terminal block for powering at the same time.

2.2 RS232 Interface

DB-9 female port is utilized for communication between the driver board and PC or other devices with DB9 port. After connection as above (figure 1-3), parameters like baud rate can be set and the display of the 7-segment information boards, such as its brightness, digits, etc., can be controlled easily via commands.

2.3 DIP Switch

On-board 4-slide DIP switch is utilized that this board can feed different 7-segment info boards with DC5V or 12V.

FIGURE 2-1 DIP SWTICH

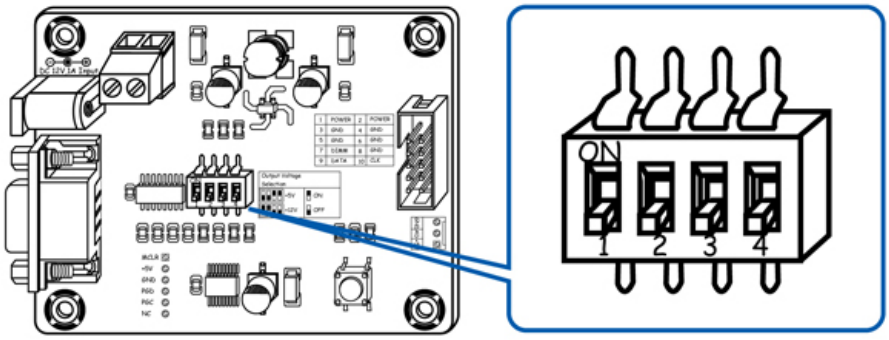


TABLE 2-2 DIP SWITCH SETTING

Output Voltage	DIP Switch Setting	
5V		
12V		
0V	 +0V	

2.4 Tactile Switch

On-board tactile switch has two functions: brightness adjustment and baud rate modification.

- If you press this switch for less than 1 second each time, you can change the display brightness.
- If you press the switch for over 3 seconds, it will enter setting mode of baud rate. After the setting is finished, you must restart the display.

2.5 Signal Output

A 10-pin socket is used for outputting signal and connection with 7-segment info boards.

FIGURE 2-2 10-PIN INTERFACE

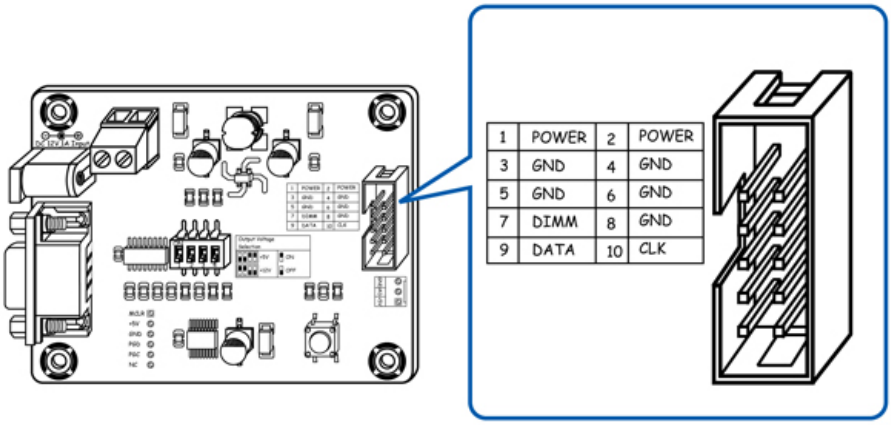


TABLE 2-3 DEFINITION OF 10-PIN INTERFACE

Pin	Mark	Description
1, 2	POWER	Positive of voltage output
3, 4, 5, 6, 8	GND	Ground
7	DIMM	Control signal of the display
9	DATA	Data line
10	CLK	Clock line

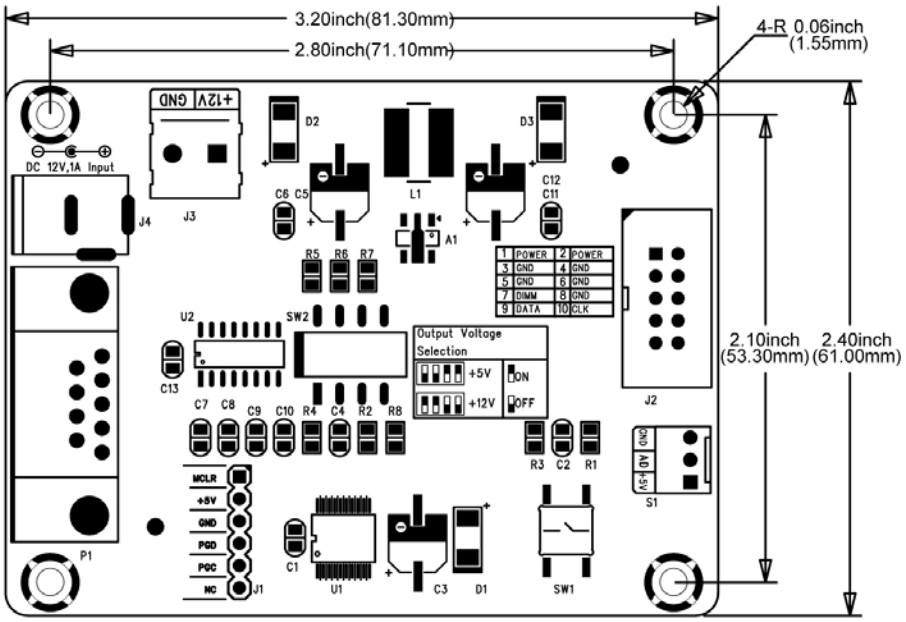
Chapter 3. Electrical Characteristics

FIGURE 3-1 ELECTRICAL CHARACTERISTICS

Parameter	Typical value
Supply Voltage	DC11V to 13V
Max Input Current	1A
Output Voltage	5V or 12V
Max Output Current	600mA@ 5V output
Digit Driven	Up to 16
Brightness Adjustment	8 levels (from 1 to 8)
Baud Rate	4800bps, 9600bps(default), 19200bps

Chapter 4. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING



Chapter 5. Appendix

Simple command set is provided for using this driver board. Each command is composed of lower-case characters and ended with "Enter" key pressed. Details are as follows:

TABLE 5-1 COMMANDS

Command Format	Example	Description
$sure + space + mseg + space + number of the digit + space + value	$sure mseg 4 9	The fourth digit displayed is 9.
$sure + space + qseg + space + number of the digit	$sure qseg 3	Check the status of the third digit
$sure + space + sseg + space + number of the digit + space + on/off	$sure sseg 2 off	Turn off the second digit
$sure + space + mlum + space + brightness level（1-8）	$sure mlum 0	Set the brightness level as 0
$sure + space + on/off	$sure off	Turn off the display
$sure + space + save	$sure save	Save the current display value

If the command is not used, system will automatically save the latest value.

Note:
1. The number of the digits ranges from 1 to 16. The first digit is the nearest one to the driver board.
2. Display value is number from 0 to 9 and/or decimal beside each digit.
3. If the command for saving values is not used, system will automatically save the latest value.

Chapter 6. Contact Us

Sure Electronics Co., Ltd.
East zone, 3F, Building 6
Jingang Technology Innovation Center
No.108 Ganjiabian Rd (ZIP: 210000)
Qixia District
Nanjing
P.R.China
Tel: +86-25-68154800-860
Fax: +86-25-68154891-832
Website: www.sure-electronics.com
Email: customerservice@sure-electronics.com