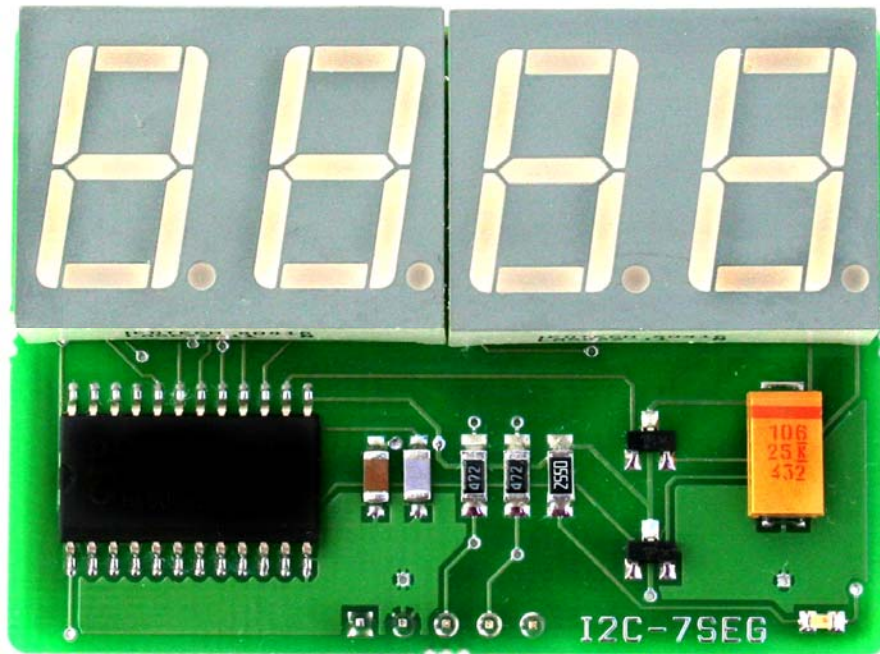


**I2C-7SEG™ I<sup>2</sup>C 4-DIGIT 7-SEGMENT DISPLAY  
User Manual**

# GRAVITECH.US



# *uResearch*

**GRAVITECH GROUP**

**Copyright © 2007 MicroResearch**  
GRAVITECH GROUP      [WWW.GRAVITECH.US](http://WWW.GRAVITECH.US)

# I2C-7SEG™ I<sup>2</sup>C 4-DIGIT 7-SEGMENT DISPLAY

## User Manual

### Description

The I2C-7SEG board is a 5-pin CMOS device that provides 4-digit of 7-segment display using I<sup>2</sup>C bus. There are no external components required. Only two signal lines SDA and SCL plus supply voltage and ground are required to be connected. This makes it perfect for embedded systems that require LED display.

This board features innovations that set it apart from other 7-segment module. Innovations feature like on-board I<sup>2</sup>C address jumpers, pull-up resistors and power LED. The module can be quickly connected directly on to the breadboard. The board is small and compact in size 1.50 x 2.05 inches.

The I2C-7SEG is designed base on SAA1064 IC. The circuit is especially designed to drive four 7-segment LED displays with decimal point by means of multiplexing between two pairs of digits. It features an I<sup>2</sup>C bus slave transceiver interface with the possibility to program four different SLAVE ADDRESSES, a POWER RESET flag, 16 current sink OUTPUTS, controllable by software up to 21 mA, two multiplex drive outputs for common anode segments, an on-chip multiplex oscillator, control bits to select static, dynamic and blank mode, and one bit for segment test.

A jumper pins vary the fixed I<sup>2</sup>C address and allow up to four devices to share the same I<sup>2</sup>C bus.

### Features

- Five colors to choose from (green, red, orange, orange/red and yellow)
- Flicker free multiplexed 7-segment display
- Total control of individual segment
- Display brightness controllable by software
- Automatically refreshes and updates each display digit
- Free up host controller for continuous display updates and refresh loops
- Stand alone module, no external components required
- On-board I<sup>2</sup>C address jumpers, pull-up resistors and power LED
- Decoupling supply voltage
- Design easy for breadboard
- High quality double sided PCB
- All SMT components
- Small and compact in size 1.50 x 2.05 inches
- Single row 0.4" width, 0.1" pitch header pins
- Flexible operating power supply voltage range of 4.5V to 15V
- Suitable for 5.0V microcontroller

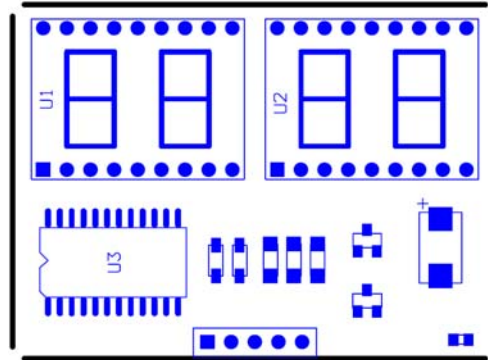
### Applications

- Any display applications

\* I<sup>2</sup>C is a trademark of Philips Semiconductors Corporation.

# I2C-7SEG™ I<sup>2</sup>C 4-DIGIT 7-SEGMENT DISPLAY User Manual

## Pin Configuration



VCC (1)  
GND (2)  
SDA (3)  
SCL (4)  
ADR (5)

Pin No.	Name	Type	Description
1	VCC	PWR	Supply voltage
2	GND	PWR	Supply ground
3	SDA	I/O	Serial data line
4	SCL	Input	Serial clock line
5	ADR	Input	Address selection input <b>(DO NOT connect this pin when using internal address mode)</b>

## Interfaces

### Power:

The I2C-7SEG board needs an external 4.5VDC – 15.0VDC supply.

- **VCC:** is an input power 4.5VDC – 15.0VDC to I2C-7SEG board.

- **GND:** is a common ground for every pin. This pin **MUST** be connected to ground of the external power supply.

### I<sup>2</sup>C pins:

The I2C-7SEG operates as a slave on the I<sup>2</sup>C bus. Only two signal lines SDA and SCL are required for I<sup>2</sup>C bus. Please refer to I<sup>2</sup>C specification for more information.

# I2C-7SEG™ I<sup>2</sup>C 4-DIGIT 7-SEGMENT DISPLAY User Manual

## Module Configuration

### I<sup>2</sup>C address:

Default address shipped from the manufacture is 0x70 for write and 0x71 for read.

ADR = GND

0	1	1	0	A1	A0	1
---	---	---	---	----	----	---

**Internal addressing mode:** The address can be easily change by solder the bridge between the middle pad of “ADR” to VCC or GND at the bottom of the module. These two options allow up to two devices to share the same I<sup>2</sup>C bus.

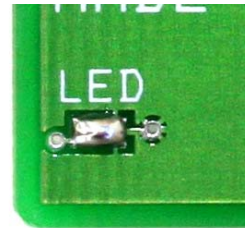


However, if you wish to connect more than two modules on the bus, the external address can be use to connect up to four modules. That is total of 16-digit. To use external address selection, remove all of the solder bridge from ADR pads. Connect voltage to the ADR pin 5 according to the table below.

ADR Voltage	Read Address	Write Address
GND	70	71
3/8 VCC	72	73
5/8 VCC	74	75
VCC	76	77

### Power-on LED:

The green LED on the module is illuminating when the power applied. The power-on LED is enabled from the manufacture. It can be disabling for light sensitive or low current requirement application by remove the solder bridge on “LED” at the bottom of the module.



**DISABLE this option when VCC is higher than 8.0VDC.**

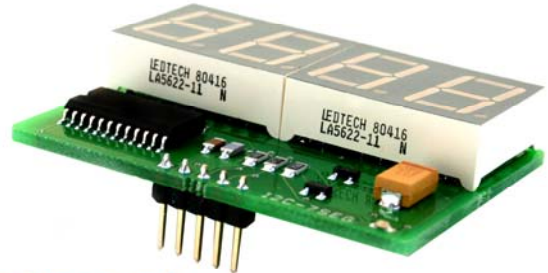
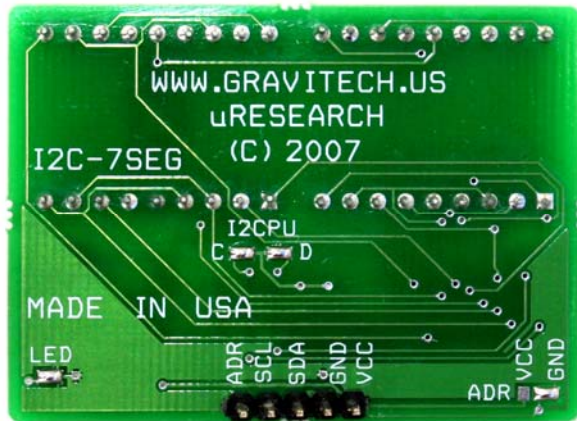
### I<sup>2</sup>C pull-up resistors:

I<sup>2</sup>C bus specification required to have pull-up resistors on SDA and SCL pin. I2C-7SEG come with these two pull-up resistors enabled from the manufacture. It can be disabling when connect to I<sup>2</sup>C bus that already have pull-up resistors by remove the solder bridge on “I2CPU” at the bottom of the module.



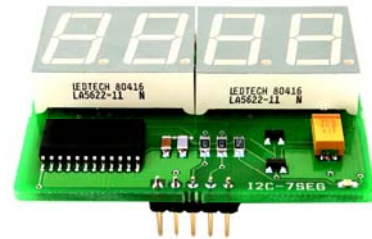
# I2C-7SEG™ I<sup>2</sup>C 4-DIGIT 7-SEGMENT DISPLAY User Manual

Below are the default settings from the manufacture.



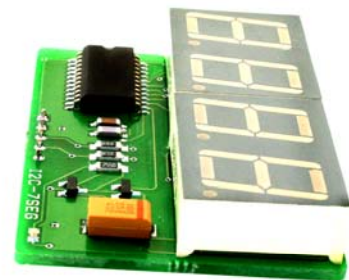
**uResearch**

© 2007 Copyright, All Rights Reserved



**uResearch**

© 2007 Copyright, All Rights Reserved



**uResearch**

© 2007 Copyright, All Rights Reserved

**Copyright © 2007 MicroResearch**  
GRAVITECH GROUP WWW.GRAVITECH.US

# I2C-7SEG™ I<sup>2</sup>C 4-DIGIT 7-SEGMENT DISPLAY User Manual

## Notes

## Contact Us

We maintain a website where you can get information on our products, obtain literature and download support files. Visit us online at:

**[WWW.GRAVITECH.US](http://WWW.GRAVITECH.US)**

Use our online Forum or e-mail your technical support questions to [support@gravitech.us](mailto:support@gravitech.us). We try to respond to your questions the same day.

For sales questions or to place and order, direct your e-mails to [sales@gravitech.us](mailto:sales@gravitech.us). Refer to our website for product pricing, shipping rates, payment instructions, and for other info we need to complete your order.

**Disclaimer: MicroResearch reserves the right to modify its products or literature, or to discontinue any product at any time without prior notice. The customer is responsible for determining the suitability of any device for any application developed using MicroResearch components.**

**Copyright © 2007 MicroResearch**  
GRAVITECH GROUP      WWW.GRAVITECH.US