

DEVBOARD-G1

USERS MANUAL

Development Platform for uOLED-XX-G1 Series Display Modules

Document Revision 1.0 (August 1st 2008)



4D Systems



PROPRIETORY INFORMATION

The information contained in this document is the property of [4D Systems Pty. Ltd](#) and may be the subject of patents pending or granted, and must not be copied or disclosed without prior written permission. It should not be used for commercial purposes without prior agreement in writing.

[4D Systems Pty. Ltd](#). Endeavours to ensure that the information in this document is correct and fairly stated but does not accept liability for any error or omission. The development of [4D Systems](#) products and services is continuous and published information may not be up to date. It is important to check the current position with [4D Systems](#).

Contact details are available from the company web site at www.4dsystems.com.au

All trademarks recognised and acknowledged.

Copyright [4D Systems Pty. Ltd](#). 2000-2008

DISCLAIMER OF WARRANTIES & LIMITATION OF LIABILITY

4D Systems Pty. Ltd. makes no warranty, either express or implied with respect to any product, and specifically disclaims all other warranties, including, without limitation, warranties for merchantability, non-infringement and fitness for any particular purpose. 4D Systems' sole obligation and liability for product defects shall be, at 4D Systems' option, to replace such defective product or refund to buyer the amount paid by buyer therefore. In no event shall 4D Systems' liability exceed the buyer's purchase price.

The foregoing remedy shall be subject to buyer's written notification of defect and return of the defective product within ninety (90) days of purchase. The foregoing remedy does not apply to products that have been subjected to misuse (including without limitation static discharge), neglect, accident or modification, or to products that have been soldered or altered during assembly, or are otherwise not capable of being tested, or if damage occurs as a result of the failure of buyer to follow specific instructions.

In no event shall 4D Systems be liable to the buyer or to any third party for any indirect, incidental, special, consequential, punitive or exemplary damages (including without limitation lost profits, lost savings, or loss of business opportunity) arising out of or relating to any product or service provided or to be provided by 4D Systems, or the use or inability to use the same, even if 4D Systems has been advised of the possibility of such damages.



Table of contents

1. Introduction

2. Features

3. Hardware Description

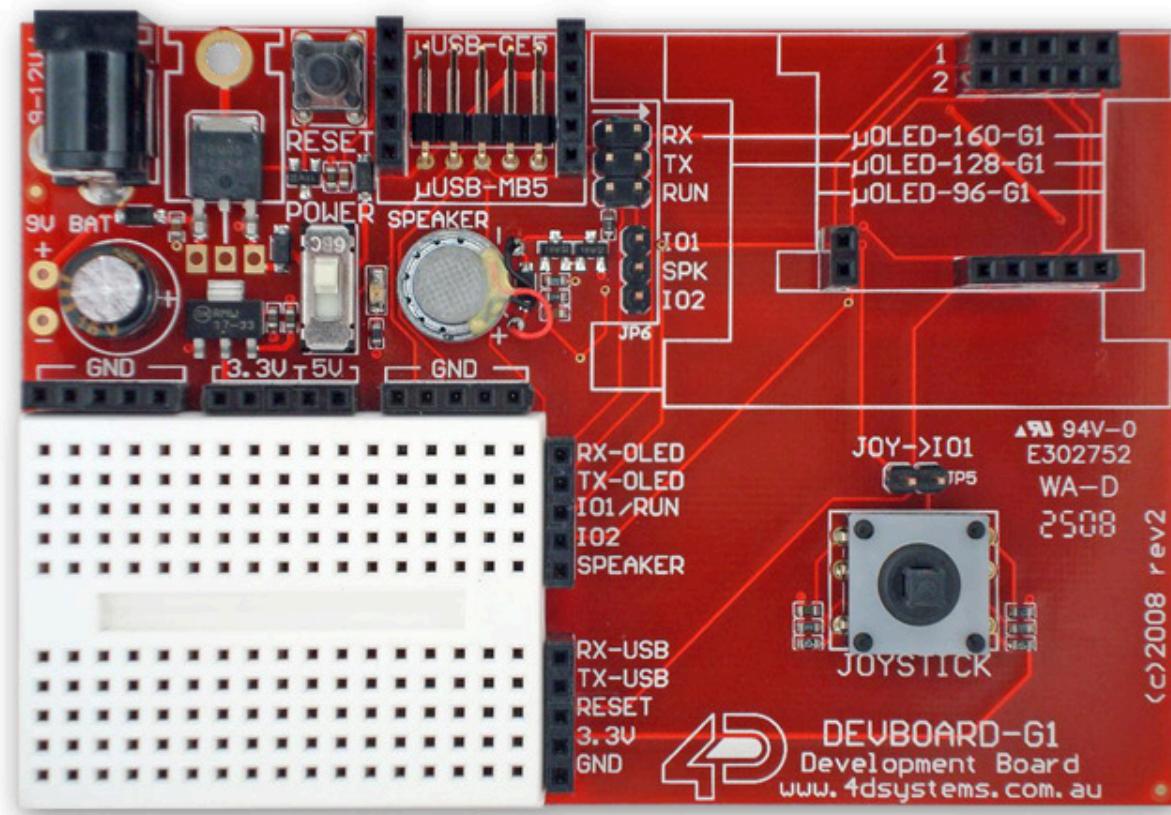
- 3.1** µOLED-96-G1 Module Connections
- 3.2** µOLED-128-G1 & µOLED-160-G1 Module Connections
- 3.3** µUSB-MB5 (USB-Serial) Module Connection
- 3.4** µUSB-CE5 (USB-Serial) Module Connection
- 3.5** Speaker – for Sound and Music Generation
- 3.6** Joystick – 5 Position Multi Switch
- 3.7** Power Supply
- 3.8** Solderless Breadboard – Circuit Prototyping

4. Related Products and Software Tools



1 Introduction

The **DEVBOARD-G1** is a compact and low-cost all in one development platform for the µOLED-96-G1, µOLED-128-G1 and the µOLED-160-G1 series of 'SMART' display modules. The feature packed board make an ideal platform for learning and experimenting with the display modules as well as the **4DGL** programming language.



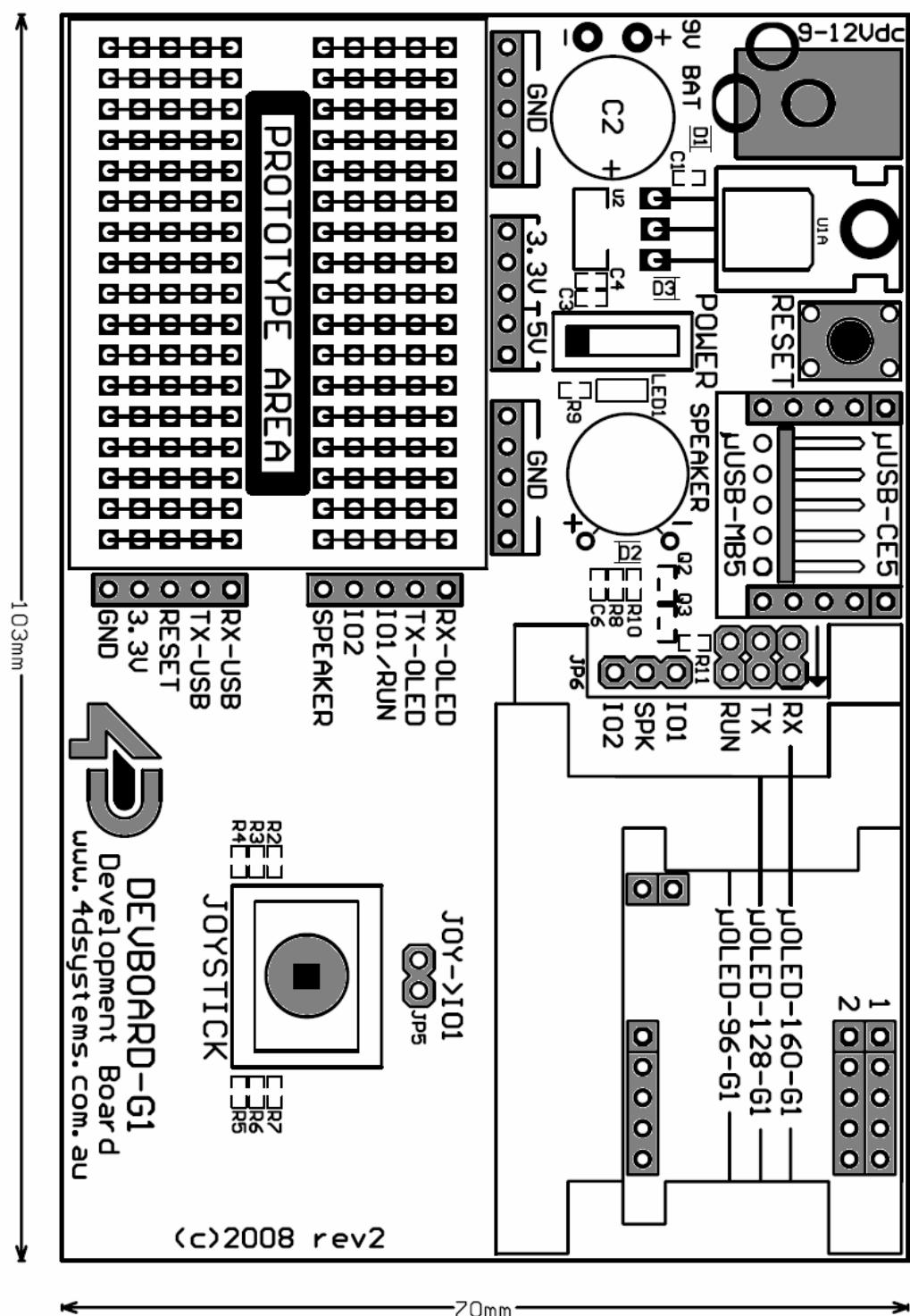


2 Features

This is what's included:

- Onboard DC-Jack (2.5mm centre positive) for wall plug adaptor (9V to 12V DC) with built in switch for automatic battery cut-off to prevent dual connection.
- PCB connections for a 9.0 Volt battery flying lead connector (not included).
- Onboard 5.0 Volt and 3.3 Volt regulators that can supply up to 500mA current (combined) for the display modules and user circuits.
- Power Switch and LED indicator.
- 8 Ohms micro speaker with darlington drive for sound and music.
- Push button RESET switch.
- 2 x 5-pin female headers for **μUSB-MB5** (USB to RS232 bridge) module for **PmmC** or **4DGL** user code downloads.
- 1 x 5-pin male header for **μUSB-CE5** (USB to RS232 bridge) module for **PmmC** or **4DGL** user code downloads.
- 2 x 5-pin female headers for **μOLED-128-G1** and **μOLED-160-G1** modules.
- 1 x 5-pin and 1 x 2-pin female headers for **μOLED-96-G1** module.
- 5 position multi-way switch Joystick.
- 170 tier solder-less breadboard for quick circuit prototyping.
- Set of 40 pieces (8 sets of 5 each) of colour coded pluggable jumper-wires. 5 pieces each of following lengths: 2, 5, 10, 15, 20, 25, 50 and 75 mm.

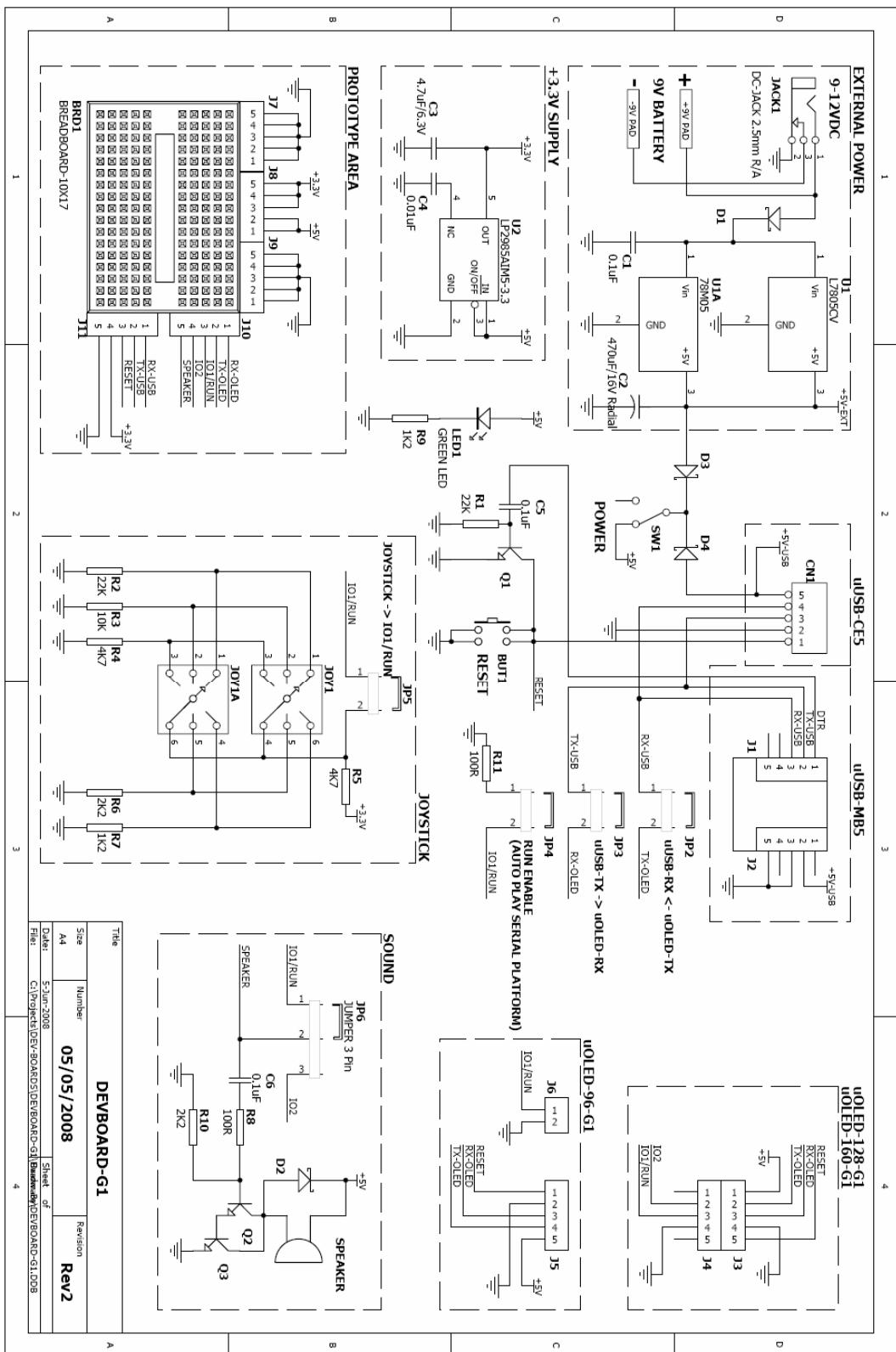
3 Hardware Description





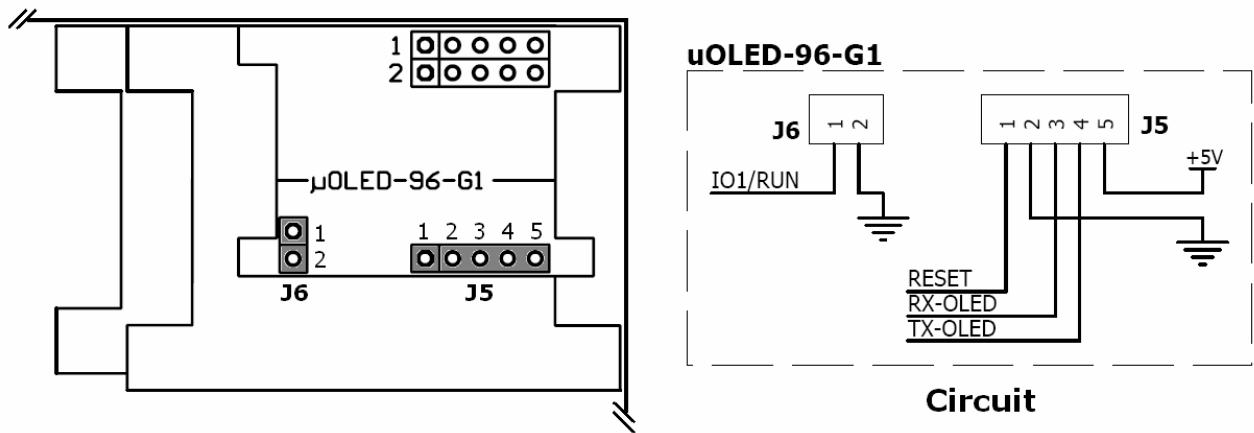
4D SYSTEMS

DEVBOARD- G1



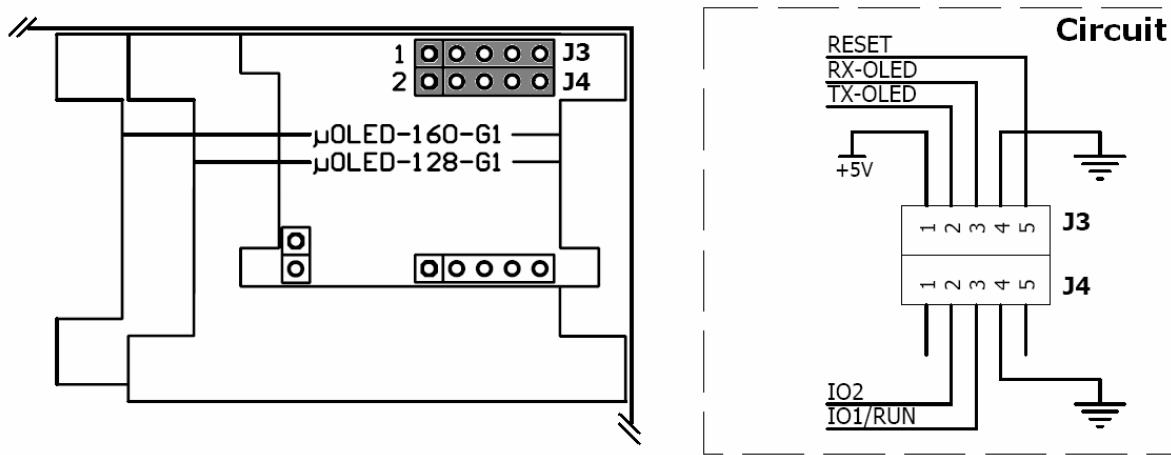
3.1 μOLED-96-G1 Module Connections

The following diagram illustrates the connectors (grey highlight) used to insert the **μOLED-96-G1** display module onto the DEVBOARD-G1.



3.2 μOLED-128-G1 & μOLED-160-G1 Module Connections

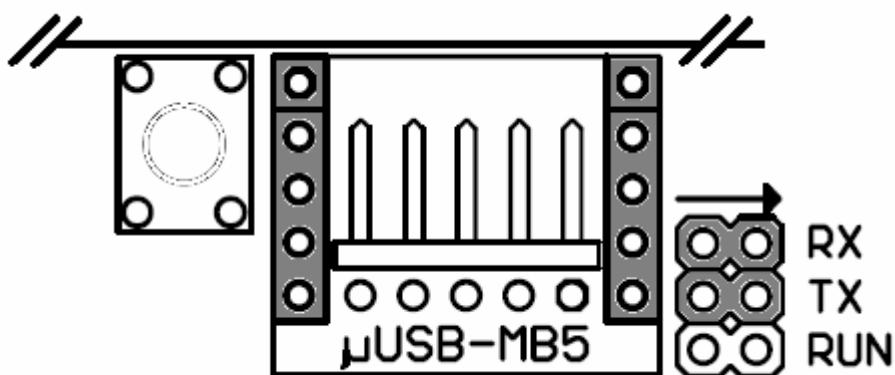
The following diagram illustrates the connectors (grey highlight) used to insert the **μOLED-128-G1** and the **μOLED-160-G1** display modules onto the DEVBOARD-G1.





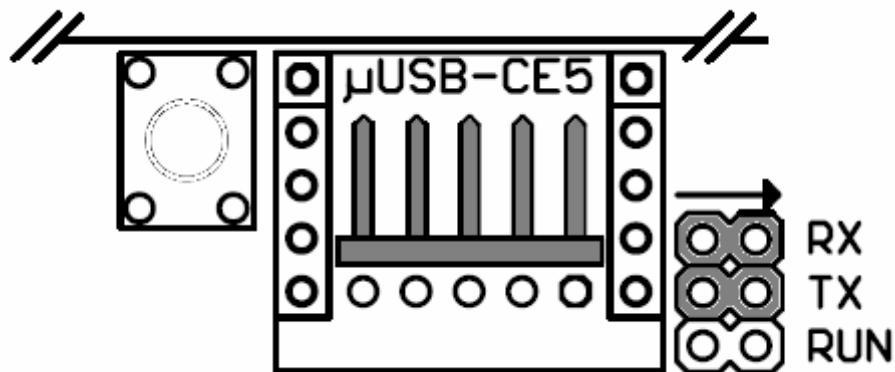
3.3 **μUSB-MB5 (USB-Serial) Module Connection**

The following diagram illustrates the 2 x 5-pin female headers (grey highlight) used to insert the **μUSB-MB5** module onto the DEVBOARD-G1. Shorting the **RX** and the **TX** jumpers with shunts will allow a direct connection of the TX/RX signals from the **μUSB-MB5** to the **μOLED-96/128/160-G1** modules. The **μUSB-MB5** also supplies the DEVBOARD-G1 with 5 Volts power.



3.4 **μUSB-CE5 (USB-Serial) Module Connection**

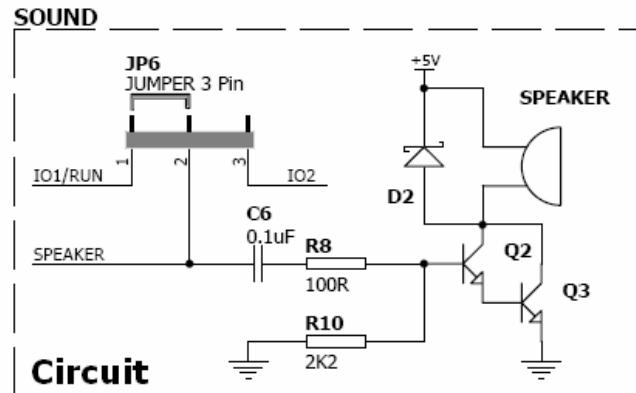
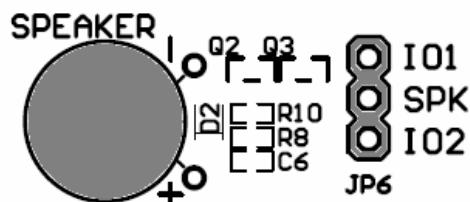
The following diagram illustrates the 5-pin right angle male header (grey highlight) used to insert the **μUSB-CE5** module onto the DEVBOARD-G1. Shorting the **RX** and the **TX** jumpers with shunts will allow a direct connection of the TX/RX signals from the **μUSB-CE5** to the **μOLED-96/128/160-G1** modules. The **μUSB-CE5** also supplies the DEVBOARD-G1 with 5 Volts power.





3.5 Speaker – for Sound and Music Generation

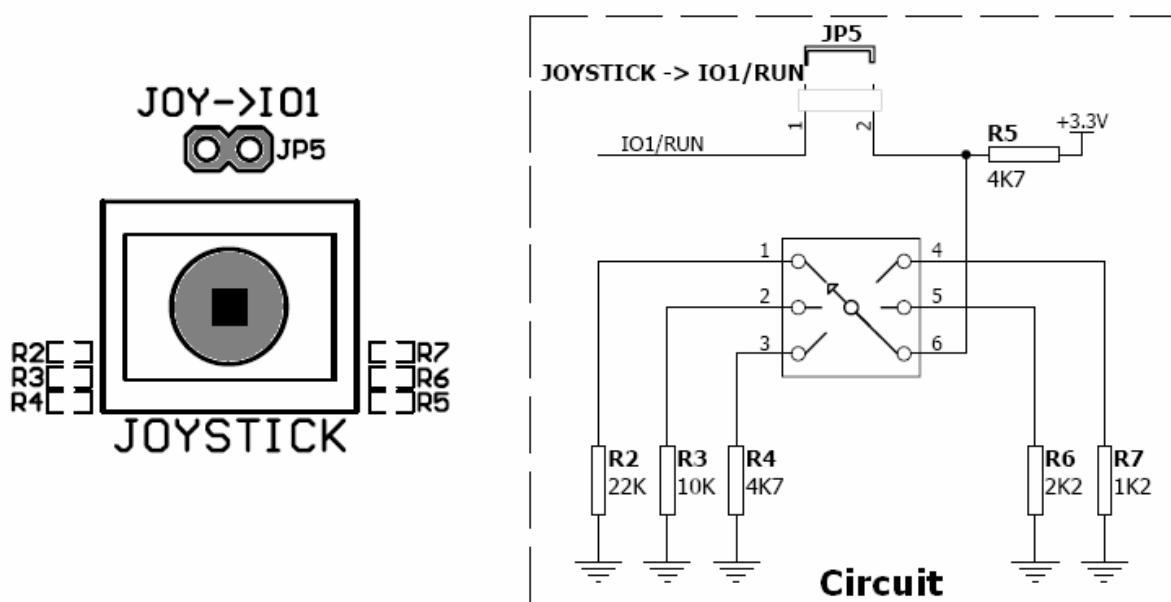
The **μOLED-96/128/160-G1** display modules, under **4DGL** program applications, are capable of generating complex sounds and music from their respective I/O pins. Using a shunt and shorting any of the 2 pins of the 3-pin jumper (**JP6**) will redirect the output of either IO1 or the IO2 pins from the display module to the speaker circuit. The **μOLED-96-G1** module has only a single I/O pin (IO1), therefore only the IO1-SPK pins can be shorted and are usable. The **μOLED-128-G1** and the **μOLED-160-G1** modules have 2 I/O pins (IO1 and IO2) that can be used to generate sound so either IO1-SPK or IO2-SPK pair of pins can be shorted and used.





3.6 Joystick – 5 Position Multi Switch

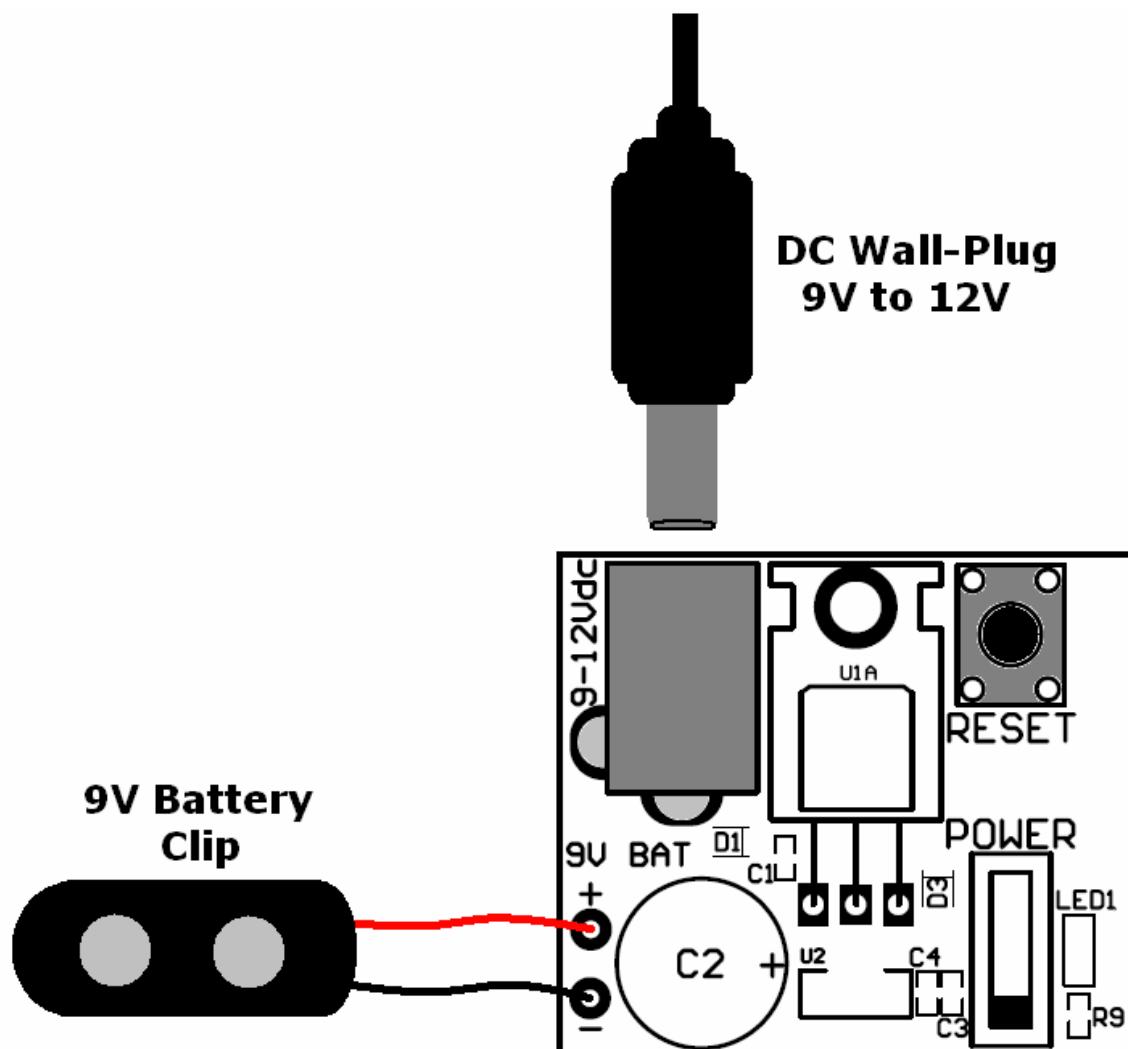
The Joystick is a 5 position multi switch and each position connects to a junction of a resistor ladder network that forms a voltage divider. The IO1 pin of **μOLED-96/128/160-G1** display modules can be programmed as an Analogue to Digital (A2D) converter input under 4DGL. Utilising the A2D feature each individual switch position voltage value can be read and decoded. Using a shunt and shorting the 2-pin jumper (**JP5**) will directly connect the output of the joystick voltage divider circuit to the IO1 pin of the display modules.





3.7 Power Supply

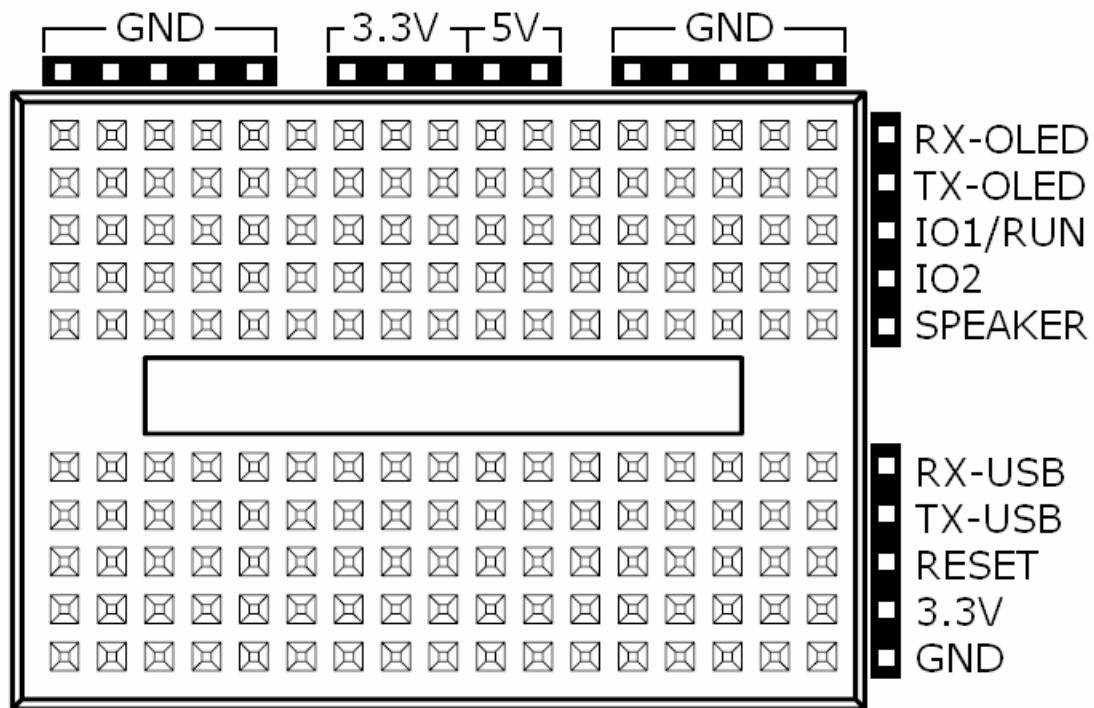
The DEVBOARD-G1 can be powered by the 5 Volts supply provided by the μ USB-MB5 or the μ USB-CE5 modules or it can be powered by an external wall-plug (9 Volts to 12 Volts DC) centre tap positive. The board also has provisions for soldering a flying lead 9V battery clip. Both the wall plug and the 9V battery clip are not provided.





3.8 Solderless Breadboard – Circuit Prototyping

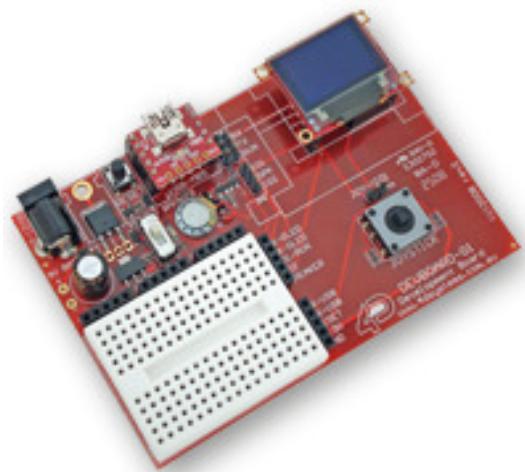
The DEVBOARD-G1 is supplied with a 170 tier (2 sets of 5 rows x 17 column sockets) solder-less breadboard for circuit prototyping purposes. Each column of 5 sockets has metal strips inside it that connect the sockets together which simplifies hooking up components. It is also supplied with 40 pieces of jumper wires of various lengths that can be used join signals to external components placed on the breadboard.





4D SYSTEMS

DEVBOARD- **G1**



with **μOLED-96-G1** and **μUSB-MB5**



with **μOLED-128-G1** and **μUSB-CE5**



with **μOLED-160-G1** and **μUSB-MB5**



4 Related Products and Software Tools

- **μUSB-MB5**

www.4dsystems.com.au/prod.php?id=18



- **μUSB-CE5**

www.4dsystems.com.au/prod.php?id=19



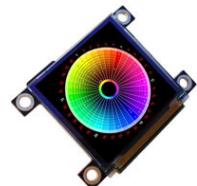
- **μOLED-96-G1**

www.4dsystems.com.au/prod.php?id=9



- **μOLED-128-G1**

www.4dsystems.com.au/prod.php?id=28



- **μOLED-160-G1**

www.4dsystems.com.au/prod.php?id=29



- **4DGL Workshop (free compiler and editor software tool)**

www.4dsystems.com.au/developers/index.php

- **4D Graphics Composer (free software tool)**

www.4dsystems.com.au/downloads/Graphics_Composer/

- **Support Forum**

www.websitetoolbox.com/tool/mb/4d