DATASHEET

4D SYSTEMS

TURNING TECHNOLOGY INTO ART

Arduino Display Module Pack

Featuring a 1.5” OLED Display Module

uOLED-128-G2-AR

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Please refer to the 4D Systems website for the latest Revision of this document

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1. Description

The 4D Systems Arduino* Display Module Pack (uOLED-128-G2-AR) is made up of a uOLED-128-G2 Display Module and an Adaptor to easily connect an Arduino to the 4D Systems Display.

The Pack comprises of:

- uOLED-128-G2 Display Module
- 4D Arduino Adaptor Shield
- 5 way Female-Female Cable

The Arduino Display Module Pack enables an Arduino user to quickly connect the 4D Arduino Adaptor Shield to their Arduino, connect the 5 way cable between the Adaptor and the Goldelox powered Display Module, and be connected in seconds to start programming their new 4D Systems Display.

The Goldelox processor in the uOLED-128-G2 can be configured in a number of ways using the 4D Systems Workshop4 IDE, which enable a comprehensive range of serial commands ready to be received from the Arduino, to draw primitives such as lines, rectangles, circles and text, to displaying images, playing sound and logging data to uSD card.

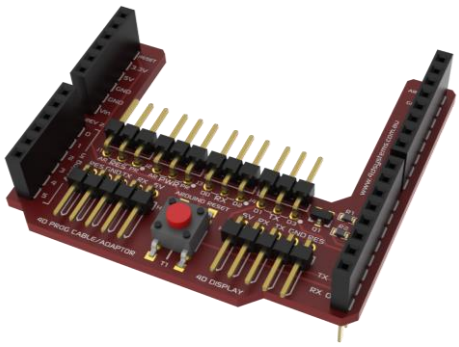
Communication to the Display Module is performed via the Arduino's hardware serial port.

A single digital on the Arduino is utilised for an external reset for the display.

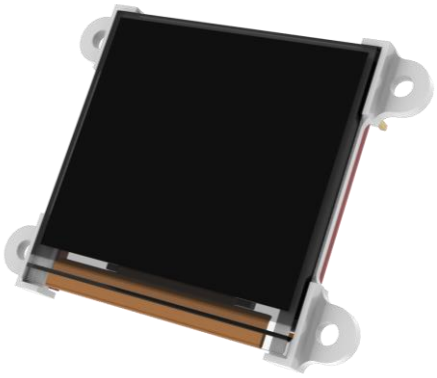
Power for the display is supplied from the Arduino's 5V bus. In most cases, no external power is required for the Display Module as all power is supplied from the Arduino, via the Adaptor Shield. The Arduino DC Jack may be required to supply the Arduino with power if the USB supply of the PC is insufficient.

In some cases, the display may be required to be powered separately to the Arduino, which the Arduino Adaptor Shield allows. Please refer to the Datasheet for the 4D Arduino Adaptor Shield for more information.

For a detailed listing of the capabilities of the display module in this Arduino Pack, please refer to the datasheet for the display itself, available from the 4D Systems website, www.4dsystems.com.au.



4D Arduino Adaptor Shield



The uOLED-128-G2 Display Module

NOTE (*): Arduino remains the property of the Arduino Team. All references to the word Arduino and Arduino Hardware are licensed under the Creative Commons Attribution Share-Alike license.

2. Advanced Hardware Options

The display module (uOLED-128-G2) is a very capable and powerful piece of hardware, which can be reconfigured beyond the boundaries of the Arduino.

With the use of the 4D Systems Workshop4 IDE Software, the display module can be configured and programmed independently of the Arduino environment.

If a user wishes to investigate the capabilities of the uOLED-128-G2 and reconfigure the display module, please refer to the Datasheet for the uOLED-128-G2, available from the 4D systems website, www.4dsystems.com.au. The user can freely change back to the configuration the module was shipped in if desired, all via the Workshop4 IDE Software.

To take advantage of the 4D Systems Workshop4 Software, a 4D Programming Cable is required, which can be purchased from the 4D Systems website, or from a 4D Systems distributor.

The Workshop4 IDE enables the uOLED-128-G2 display module to be configured using 3 different environments.

- The **Designer** environment enables the user to write 4DGL code in its natural form to program the display module.
- A visual programming experience, suitably called **ViSi**, enables click-and-place type placement of objects to assist with 4DGL code generation and allows the user to visualise how the display will look while being developed.
- A **Serial** environment is also provided to transform the display module into a slave serial module, allowing the user to control the display from any host microcontroller or device with a serial port.

Designer and **ViSi** allow the user to program and write their own protocol to communicate between the Arduino and the Display Module.

The **Serial** environment loads an application (SPE) onto the display module which enables commands from the Arduino to communicate directly with the Goldelox Processor on the display module and get it to perform specific actions. 4D Systems has developed a library specifically for this environment also, which is available for download from the uLCD-128-G2-AR product page on the 4D Systems Website, www.4dsystems.com.au.

3. Arduino Serial Library Functions (For use with Serial/SPE Environment only)

The following is a list of Arduino functions available to use with the 4D Systems Arduino Serial Library for Goldelox Modules. These commands are only relevant if the display is configured to use the Serial Environment. They are not relevant for the other environments available with the Workshop4 IDE.

For detailed information on each of these functions, please refer to the Arduino Library itself available from the samples menu of the 4D Systems Workshop 4 Software or from the 4D Systems Github Repository. Please also refer to the product page and to the Application Notes, available from the 4D Systems website, www.4dsystems.com.au

Graphics Functions:

- gfx_Cls()
- gfx_ChangeColour(oldColour, newColour)
- gfx_Circle(x, y, radius, colour)
- gfx_CircleFilled(x, y, radius, colour)
- gfx_Line(x1, y1, x2, y2, colour)
- gfx_Rectangle(x1, y1, x2, y2, colour)
- gfx_RectangleFilled(x1, y1, x2, y2, colour)
- gfx_Polyline(n, vx, vy, colour)
- gfx_Polygon(n, vx, vy, colour)
- gfx_Triangle(x1, y1, x2, y2, x3, y3, colour)
- gfx_Orbit(angle, distance)
- gfx_PutPixel(x, y, colour)
- gfx_GetPixel(x, y)
- gfx_MoveTo(xpos, ypos)
- gfx_LineTo(xpos, ypos)
- gfx_SetClipRegion()
- gfx_ClipWindow(x1, y1, x2, y2)
- gfx_Set(function, value)

  gfx_Set shortcuts:
  - gfx_BGcolour(colour)
  - gfx_Clipping(mode)
  - gfx_TransparentColour(colour)
  - gfx_Transparency(mode)
  - gfx_FrameDelay(delay)
  - gfx_ScreenMode(delay)
  - gfx_OutlineColour(colour)
  - gfx_Contrast(value)
  - gfx_LinePattern(pattern)

Text and String Functions:

- charwidth('char')
- charheight('char')
- putstr(pointer)
- putCH(pointer)
- txt_Set(function, value)

  txt_Set shortcuts:
  - txt_FGcolour(colour)
  - txt_BGcolour(colour)
  - txt_FontID(id)
  - txt_Width(multiplier)
  - txt_Height(multiplier)
  - txt_Xgap(pixelcount)
  - txt_Ygap(pixelcount)
  - txt_Opacity(mode)

- txt_Bold(mode)
- txt_Italic(mode)
- txt_Inverse(mode)
- txt_Underlined(mode)
- txt_Attributes(value)
- txt_MoveCursor(line, column)

Media Functions (SD/SDHC memory Card):

- media_Init()
- media_SetAdd(HIword, LOword)
- media_SetSector(HIword, LOword)
- media_ReadByte()
- media_ReadWord()
- media_WriteByte(byte_val)
- media_WriteWord(word_val)
- media_Flush()
- media_Image(x, y)
- media_Video(x, y)
- media_VideoFrame(x, y, frameNumber)

Image Control Functions:

- blitComtoDisplay(x, y, width, height, data)

Sound Functions:

- BeeP(note, duration)

Serial (UART) Communications Functions:

- setbaudWait(index)

System Functions:

- sys_GetModel()
- sys_GetVersion()
- sys_GetPmmC()
- SSTimeout(timeout)
- SSSpeed(speed)
- SSMode(mode)

Memory Access Functions:

- peekW(word)
- pokeW(word, value)
- peekB(byte)
- pokeB(byte, value)

GPIO Functions:

- joystick()

4. Specifications and Ratings

RECOMMENDED OPERATING CONDITIONS					
Parameter	**Conditions**	**Min**	**Typ**	**Max**	**Units**
Supply Voltage (VCC)		4.5	--	5.5	V
Operating Temperature		-10	--	+70	°C

ORDERING INFORMATION
Order Code: uOLED-128-G2-AR **Packaging:** Module sealed in antistatic foam padded 4D Systems Box

5. Legal Notice

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6. Contact Information

For Technical Support: support@4dsystems.com.au

For Sales Support: sales@4dsystems.com.au

Website: www.4dsystems.com.au

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Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А