



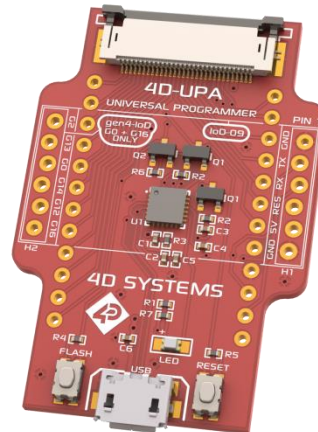
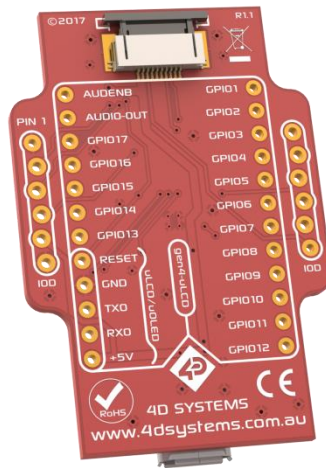
4D SYSTEMS
TURNING TECHNOLOGY INTO ART



4D Universal Programming Adaptor

4D-UPA

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

Revision History

REVISION	DATE	COMMENT	REMARKS
1.0	13/09/2017	Initial Draft	Initial Draft Version
1.1	16/11/2017	Updated the Mechanical Dimensions	
1.2	20/11/2017	Formatting change	

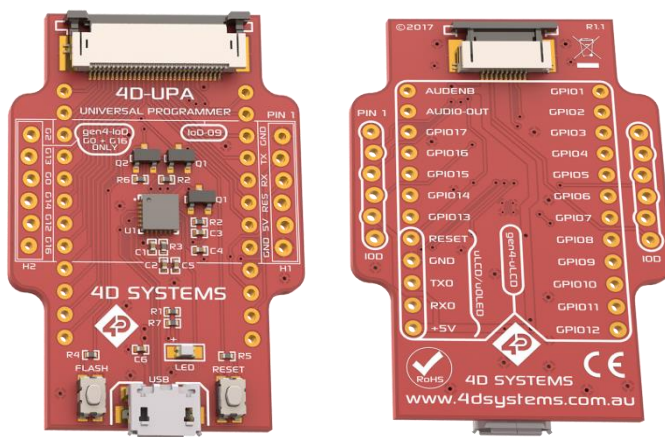
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1. Description

The 4D-UPA (Universal Programmer Adaptor) is a universal programmer designed to replace all current 4D programmers, such as the uUSB-PA5, gen4-PA, gen4-IoD-PA, and the 4D Programming Cable. It can be used for programming gen4 display modules, gen4-IoD display modules, IoD-09TH display modules, uLCD and uOLED display modules. It can also be used for interfacing to a breadboard for prototyping, or for interfacing to virtually any host.

- It has a 30-way FFC connector at the top of the module, for connecting to gen4-uLCD-xx display modules.
- On the opposite side is a 10 way FFC connector, for connecting to gen4-IoD-xx display modules.
- Located centrally in the larger rectangular outline, are pads associated with the gen4-uLCD-xx modules. These break out all the signals which come to/from the gen4-uLCD-xx modules.
- 5 of the above signals are the universal 4D RESET/GND/TX/RX/5V signals, these are located together to enable interfacing/programming of the uLCD and uOLED display modules, such as the uLCD-43DT and uOLED-128G2.
- The outer 2 sets of 6 holes are for mounting and programming the IoD-09TH display module. The IoD-09TH pads are slightly offset, enabling a simple 'friction fit' interface to the 4D-UPA, no soldering or headers are required - although headers can be added (not included) if required.



GEN4-PA	DIABLO16	PICASO
GPIO1	PA3	IO1
GPIO2	PA2	IO2
GPIO3	PA1	IO3
GPIO4	PA0	IO4
GPIO5	PA9	BUS5
GPIO6	PA8	BUS4
GPIO7	PA7	BUS3
GPIO8	PA6	BUS2
GPIO9	PA5	BUS1
GPIO10	PA4	BUS0
GPIO11	PA10	BUS6
GPIO12	PA11	BUS7
GPIO13	PA12	IO5
GPIO14	PA13	RX1
GPIO15	PA14	TX1
GPIO16	PA15	I2C_SCL
GPIO17	N/C	I2C_SDA

The 4D-UPA utilises the Silicon Labs CP2104 USB to Serial Bridge IC. More information about this can be found from the Silicon Labs website. A link to the driver is available on our website.

- USB 2.0 compliant Full Speed 12Mbps maximum speed.
- Hardware or Xon/Xoff handshaking supported, 300bps to 2Mbps
- UART supports 5, 6, 7, 8 data bits, 1, 1.5, 2 stop bits, odd/even/mark/space and no parity
- Supports Windows 2000 and above, MAC (OSX-8 and above) and Linux (2.4 kernel and above)
- USB powered
- -10 to +60 degrees Celsius temp range

1.1. Example Hardware Connections

The following pictures show how to connect the 4D-UPA to various hardware and display modules.



Figure 1. Connection of an IoD-09TH Display module to 4D-UPA with a μ USB Cable.



Figure 2. Typical connection of gen4 display module (gen4-uLCD-43DCT-CLB) to 4D-UPA



Figure 3. gen4 display (gen4-uLCD-43DCT-CLB), connected to the 4D-UPA using 30-way FFC cable, and a 5-way cable connecting to the Arduino Adaptor Shield, on top on an Arduino.

Please note that the RX pin of the Adaptor Shield goes to the TX pin of the UPA and the TX pin of the Adaptor Shield goes to the RX pin of the UPA.

When connecting another device (such as an Arduino – shown in the previous Figure 3) to the 5-way interface pins on the 4D-UPA, while connecting a 4D Display module to the 30-way FFC, the connection to the other device (Arduino for example) utilises the UART0 serial port on the gen4 display. This is also used by the USB controller to program the gen4 display module. Therefore, each time you program to the display module, the 5-way cable needs to be disconnected to the other device (Arduino for example) so the serial UART will not have conflicts and fail. Alternatively, separately wiring to other GPIO pins on the 4D-UPA to utilise the UART1/2/3 (as is available on selected gen4 display modules) will allow this conflict to be avoided, due to utilising a separate UART. Adjustments to the settings in Workshop4 to utilise comms to a different UART, is required.

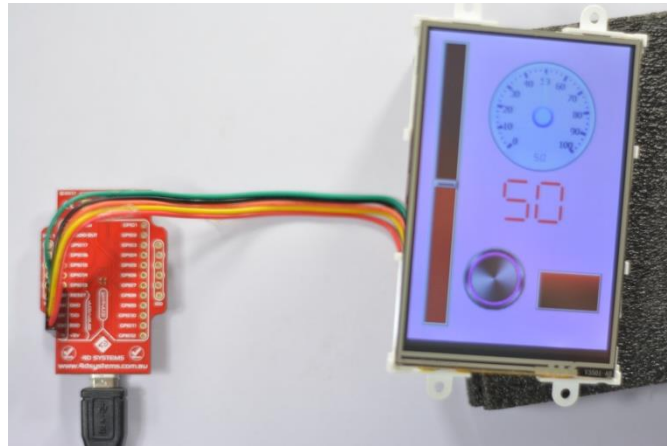


Figure 4. 4D- μLCD Display (μLCD-35DT) connected to the 4D-UPA

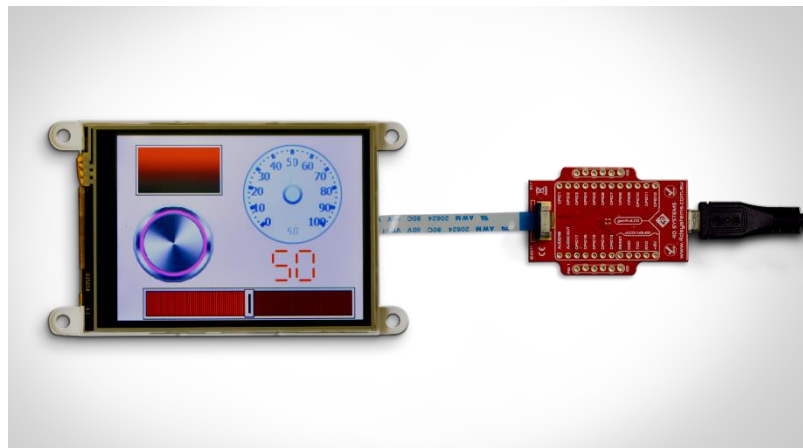


Figure 5. gen4-IoD Display (gen4-IoD-32T) connected to the 4D-UPA

The FFC cables supplied by 4D Systems (included with products) have the following specifications:

30 Pin Flexible Flat Cable, 150mm Long,
0.5mm (0.02") pitch

Cable Type: AWM 20624 80C 60V VW-1

Heat Resistance 80 Degrees Celsius

Connections on the opposite side at each
end (Type B)

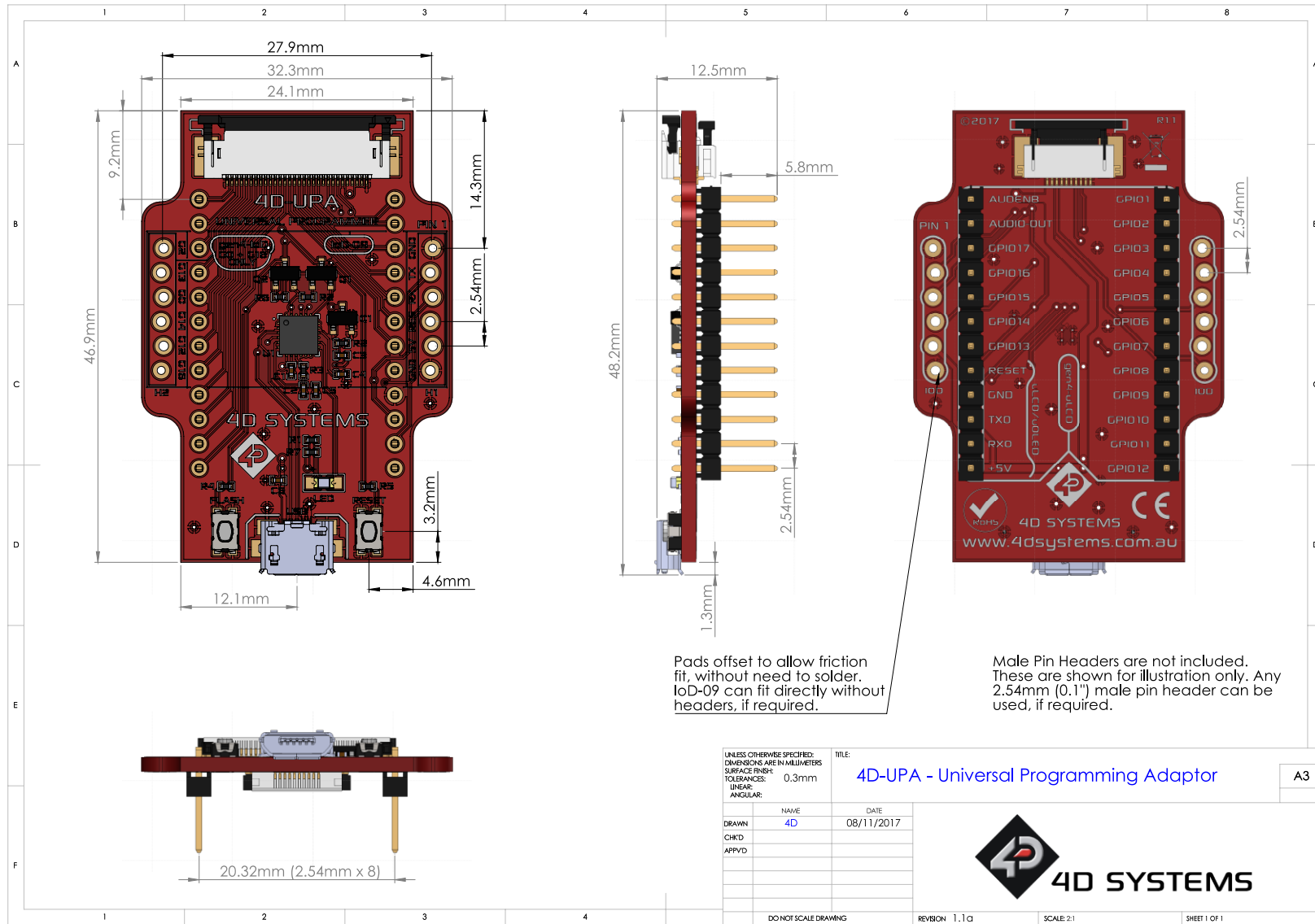
10 Pin Flexible Flat Cable, 100mm Long,
0.5mm (0.02") pitch

Cable Type: AWM 20624 80C 60V VW-1

Heat Resistance 80 Degrees Celsius

Connections on the opposite side at each
end (Type B)

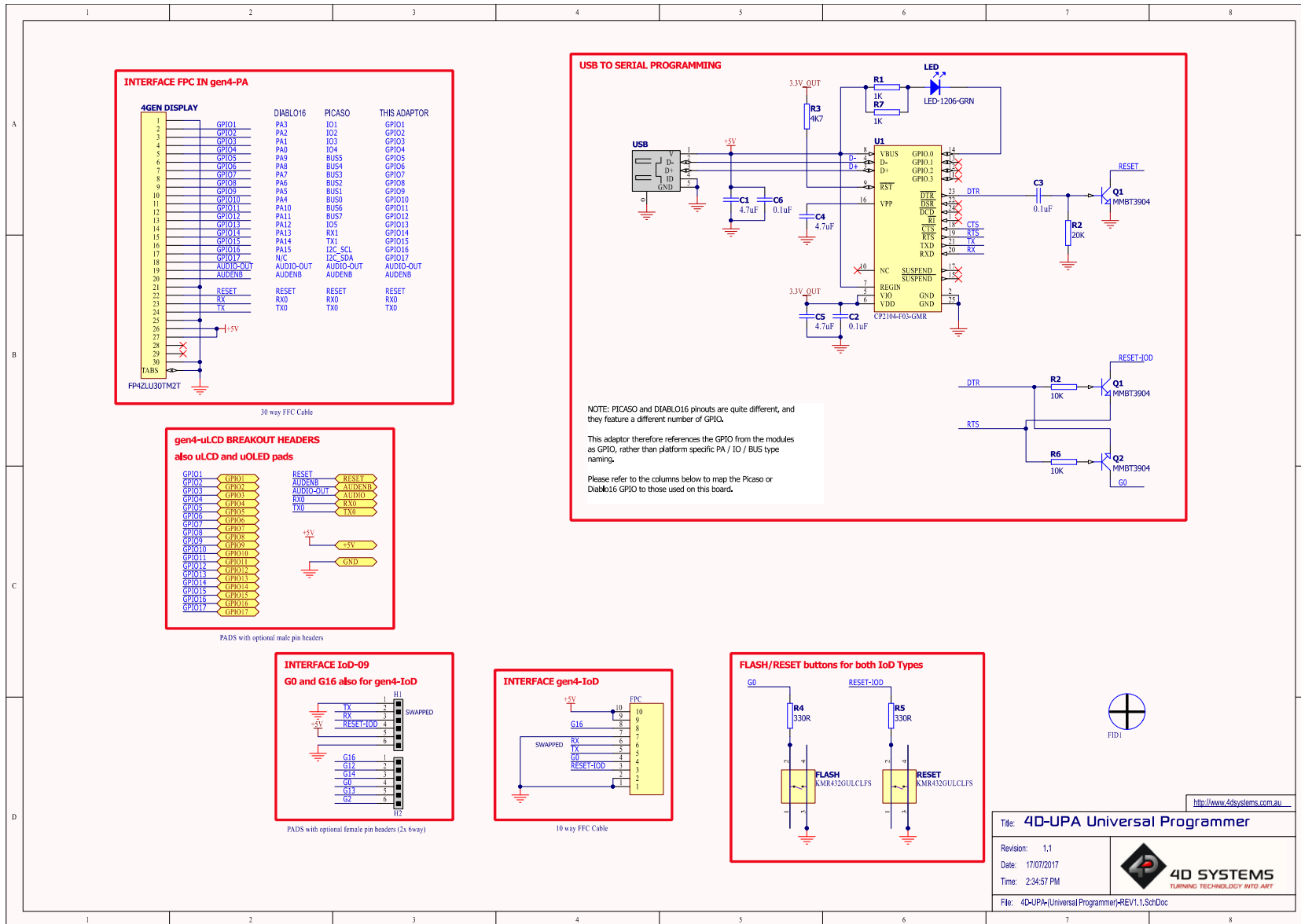
2. Mechanical Dimensions



Pads offset to allow friction fit, without need to solder. IoD-09 can fit directly without headers, if required.

Male Pin Headers are not included. These are shown for illustration only. Any 2.54mm (0.1") male pin header can be used, if required.


3. Schematic Diagram



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5. Contact Information

For Technical Support: <http://www.4dsystems.com.au/support>

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