

## 2.8" microLCD

Intelligent PICASO Display Module

$\mu$ LCD-28PTU



**4D SYSTEMS**  
*TURNING TECHNOLOGY INTO ART*

# MESSAGE FROM THE CEO

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To our valued customers,

Thank you for your interest in 4D Systems and the products we have to offer.

We are constantly looking for ways to improve our customer experience and it is hoped that a Product Brief such as this, can instil confidence in choosing 4D Systems as your supplier of superior embedded electronic products.

We invite you to showcase our latest release and thank you again for your continued support.

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Atilla Aknar  
Founder & CEO

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# 1. Overview of the $\mu$ LCD-28PTU

The  **$\mu$ LCD-28PTU** is an Intelligent Display Module packed with plenty of features, ready to become the GUI for your next target application. It is the perfect choice for many applications that require a front end smart graphics interface.

Embedded at the heart of the design is the **PICASO** Graphics Processor, which is driven by a highly optimised virtual core engine; EVE (Extensible Virtual Engine).

The  **$\mu$ LCD-28PTU** is an elegant combination of a 2.8" (240x320) LCD Screen, audio amplifier and speaker, micro-SD card connector, Lithium Polymer (LiPo) battery support, along with a group of general purpose input/output pins (GPIO's), including I<sup>2</sup>C and serial communications.

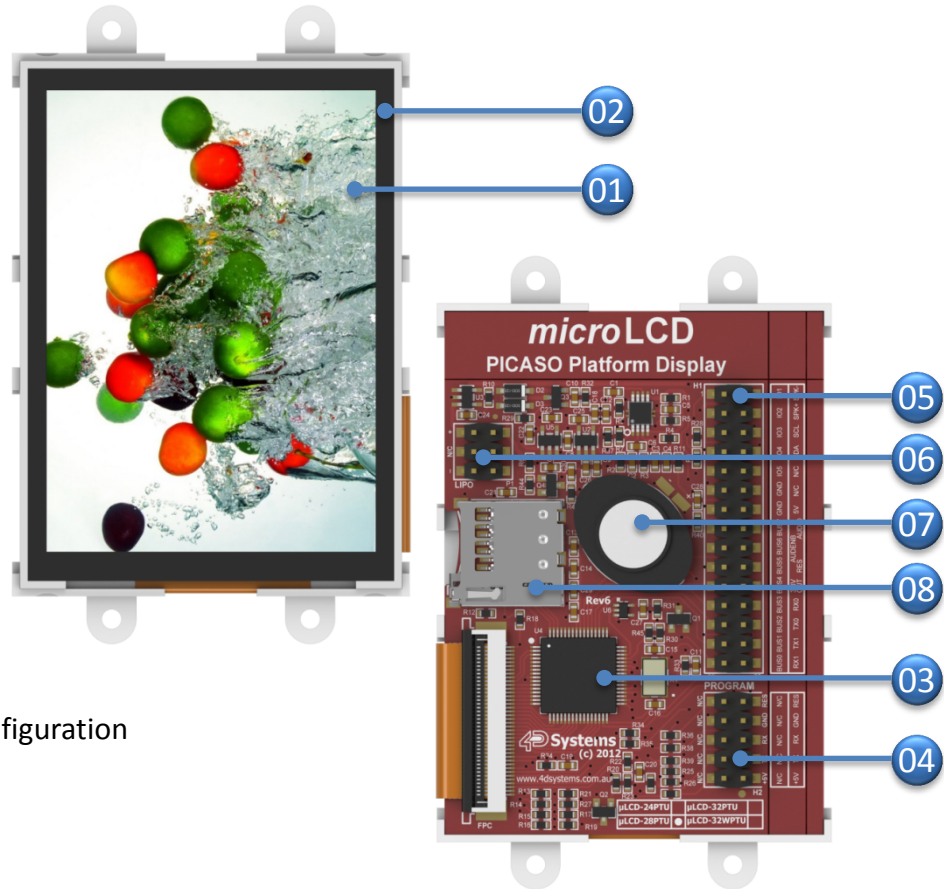
The  **$\mu$ LCD-28PTU** can be programmed in its native 4DGL language (similar to C), using the Workshop4 IDE software tool suite, or it can be configured as a serial slave device to use with your favourite host controller. The freedom is at your fingertips with this 2.8" intelligent microLCD module.





# 2. Module Features

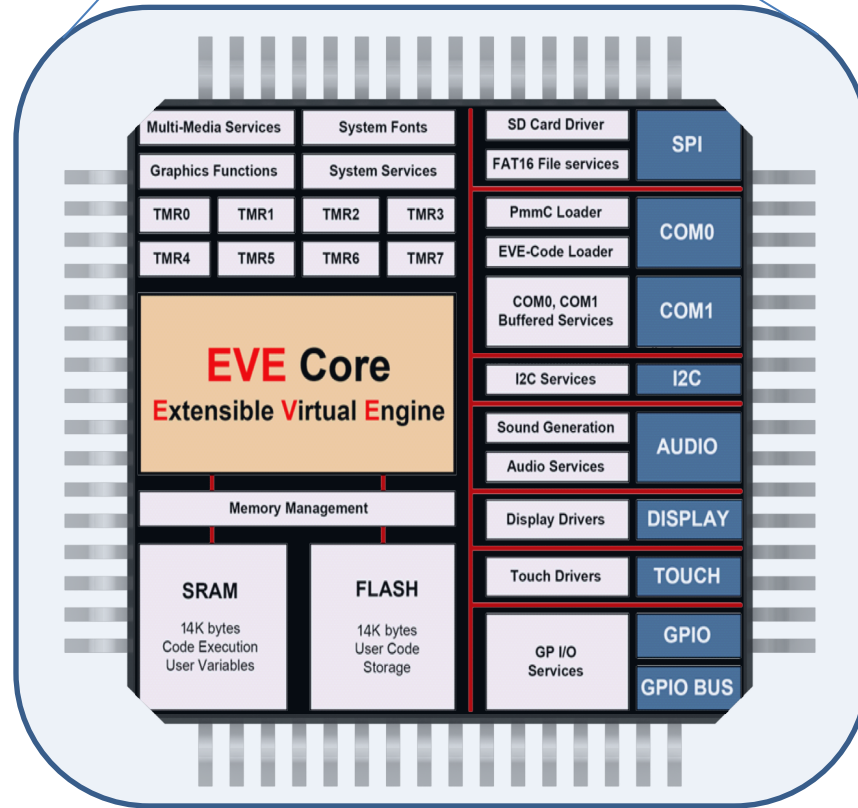
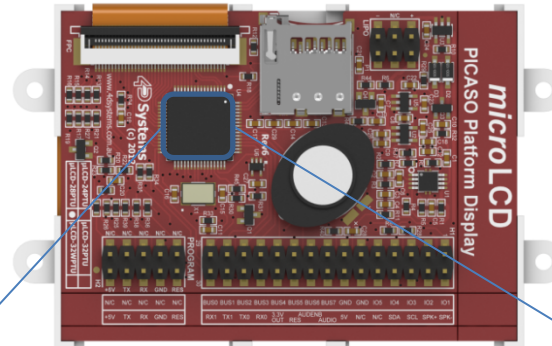
- 01 2.8" TFT LCD Touch Screen
- 02 240x320 Resolution with 65K True to Life Colours
- 03 PICASO Graphics Processor
- 04 2 x 5 Pin Serial Programming Interface
- 05 2 x 15 pin Header for Expansion
- 06 2 x 3 pin Header for Battery Connection
- 07 1.2W Audio Amplifier with Speaker
- 08 micro-SD Card Slot
  
- 09 DOS compatible file access (FAT16)
- 10 Dual serial ports, RX0/TX0 and RX1/TX1
- 11 I<sup>2</sup>C Communication Bus
- 12 SPI Communication Bus for uSD Storage
- 13 13 General Purpose IO
- 14 8 of the GPIOs useable in a parallel bus configuration
- 15 8 x 16 bit timers with 1ms resolution
- 16 4 x Corner Plates with 2.7mm holes
- 17 Light Weight at only ~ **43gm**



# 3. PICASO Processor

The **PICASO** is a custom embedded graphics Processor designed to interface with many popular OLED and LCD display panels. Powerful graphics, text, image, animation and countless more features are built right inside the chip. It offers a simple plug-n-play interface to many 16bit 80-Series colour LCD and OLED displays.

The **PICASO** offers a complete suite of features, crafted to be at the forefront of any product requiring colour, animation, images and sound. The **PICASO** is also powerful enough to control and communicate with peripheral devices over SPI, I<sup>2</sup>C or Serial Port.



## 4. 2.8" TFT LCD Display

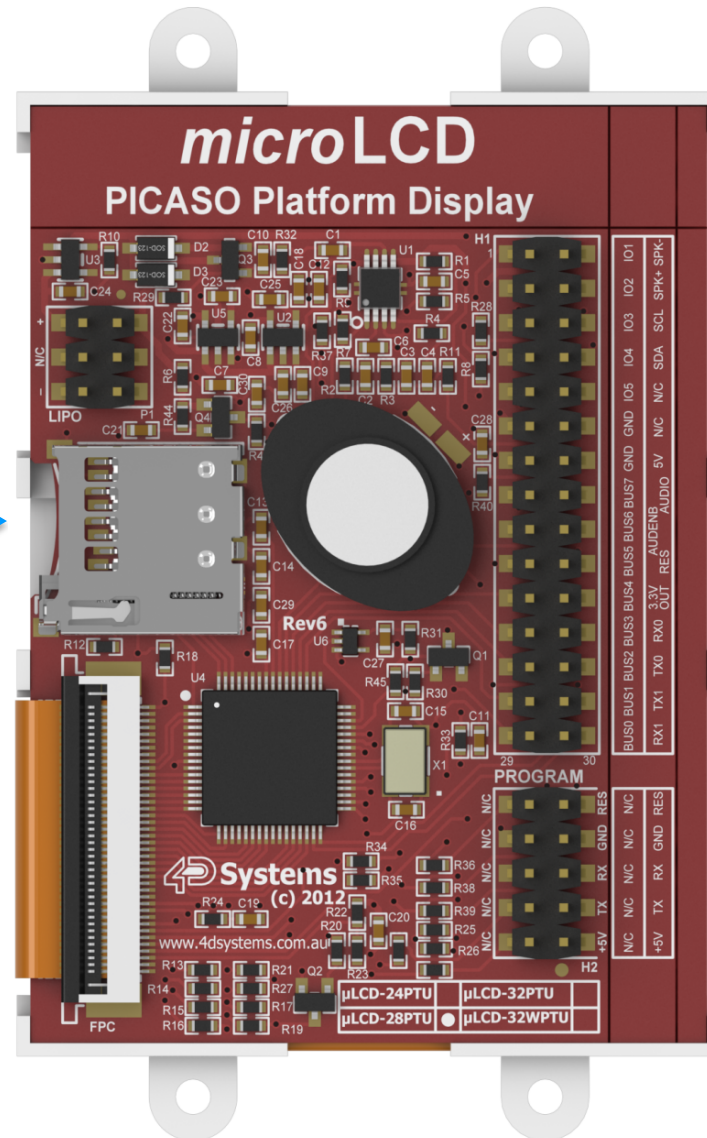
The **μLCD-28PTU** has a **2.8"** TFT LCD display at the forefront of the design that showcases the power and capabilities of the PICASO processor. Combining a resolution of **240x320** pixels with **65K** True to Life colours, the **μLCD-28PTU** delivers an astounding plethora of colours perfect for animations, slideshows and a number of multimedia presentations.



# 5. micro-SD Card Slot

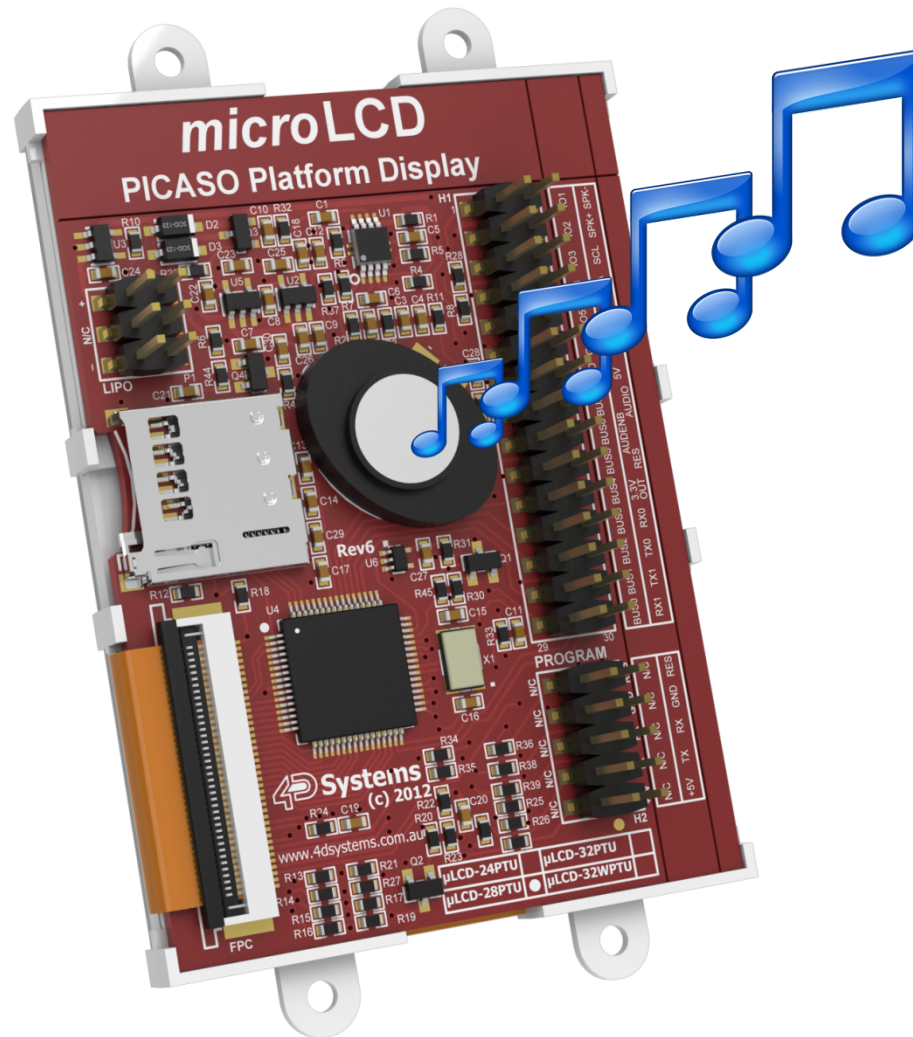
The  $\mu$ LCD-28PTU supports **micro-SD** memory cards via the on-board micro-SD connector. This provides the user with expandable memory space suitable for all multimedia file retrieval; such as images, animations and movie clips, as well as data logging applications.

Supports up to 2GB micro-SD as well as micro-SDHC memory cards starting from 4GB and above.



## 6. Audio

Audio playback support in the PICASO Processor enables the **μLCD-28PTU** module to play audio WAV files stored in the micro-SD memory card. **PWM** and an on-board audio amplifier with 8Ω speaker ensure ample audio output capability. A simple instruction enables the user to play/pause/stop audio files while continuing the execution of the users code, such as display updates, touch recognition, communications, etc. The audio system also allows real time pitch change of audio samples.

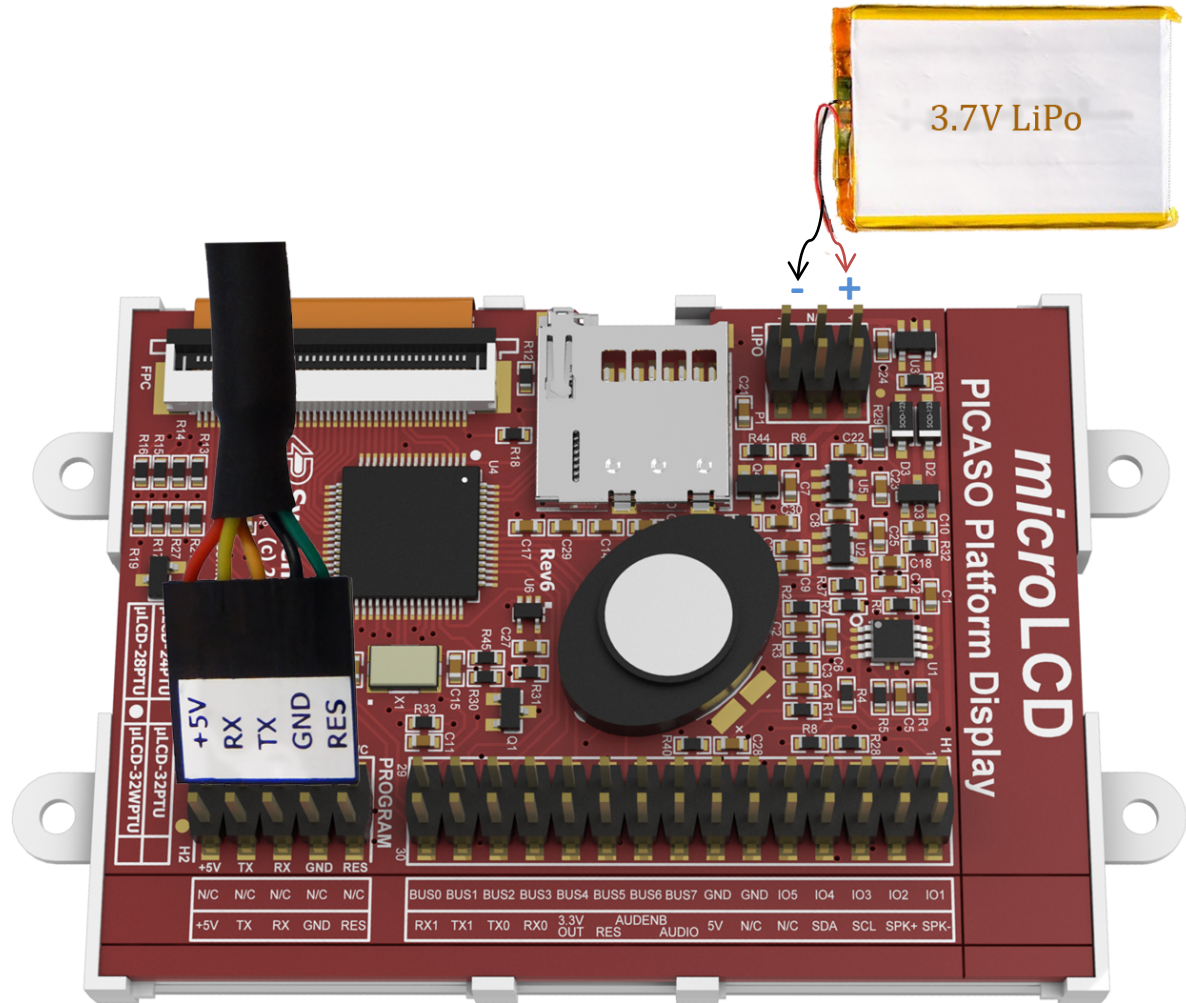




# 7. Powering Your Device

Powering the  $\mu$ LCD-28PTU is as simple as connecting to a PC via a 4D Programming Cable. Power can also be supplied by a regulated 5V DC source.

Alternatively, there is a rechargeable LiPo battery circuit on board, with a 2x3Pin connector. A 3.7V LiPo battery connected with the module provides a perfect solution for handheld applications.



# 8. What you need

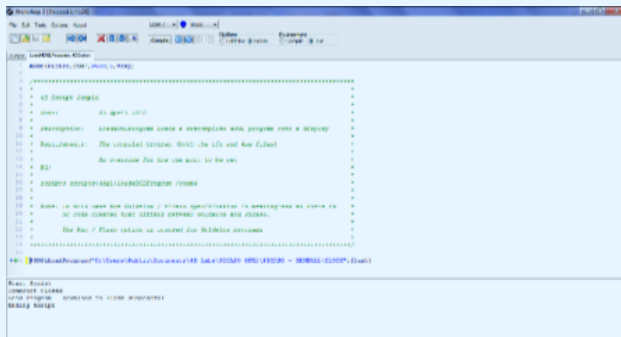
## Essential items



4D Programming Cable



Windows Based PC



4D Workshop4 IDE Software Tool

## Optional Items



micro-SD Card & SD Adaptor



3.7V LiPo Battery

# 9. Development Environment

**Workshop4** is a comprehensive software IDE tool suite that provides an integrated software development platform for all of the 4D family of processors and modules. The Workshop4 IDE supports four different **Development Environments** for the user, to cater for different requirements and skill level.



**Designer:** The Designer environment enables the user to write 4DGL code in its natural form to program the  $\mu$ LCD-28PTU.



**ViSi:** A visual programming experience, suitably called ViSi, enables drag-and-drop type placement of objects to assist with 4DGL code generation and allows the user to visualise how the display will look while being developed.



**ViSi-Genie:** An advanced environment called ViSi-Genie doesn't require any 4DGL coding at all, it is all done automatically for you. Simply lay the display out with the objects you want, set the events to drive them and the code is written for you automatically. ViSi-Genie provides the latest rapid development experience from 4D Systems.



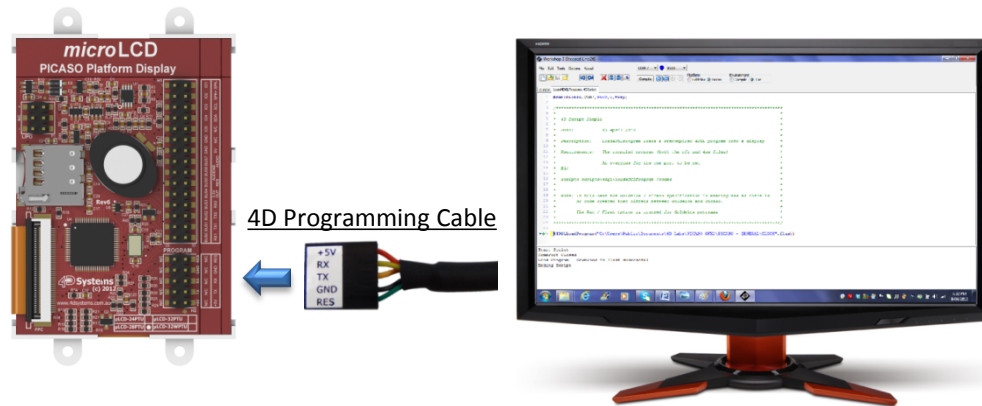
**Serial:** A Serial environment is also provided to transform the  $\mu$ LCD-28PTU into a slave serial module, allowing the user to control the display from any host microcontroller or device with a serial port.



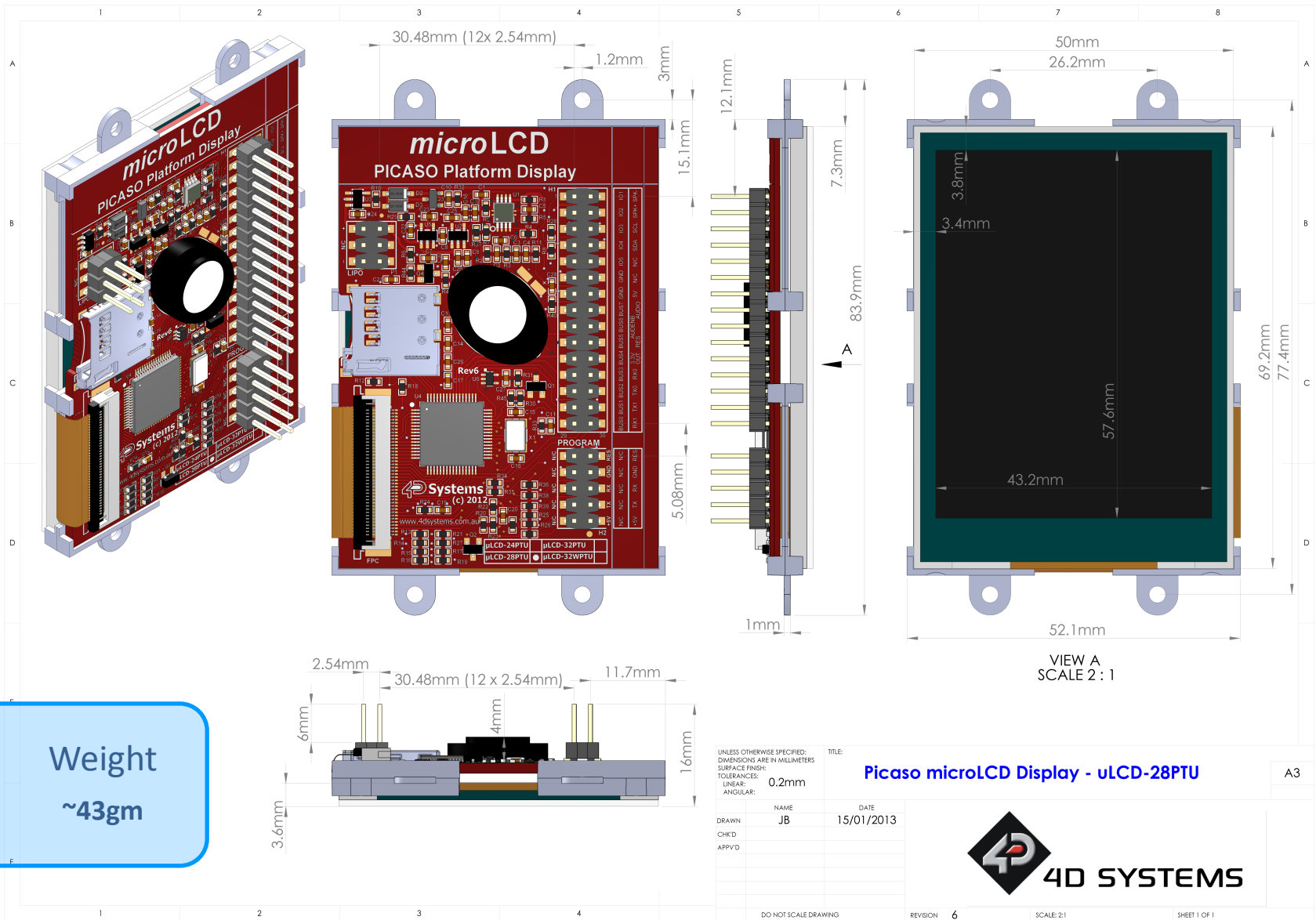
# 10. Getting Started

Getting started is as simple as connecting the 4D Programming Cable to the display module, and choosing your product and Development Environment in the 4D Workshop4 IDE.

4D Workshop4 IDE guides you through the relevant aid tools with adequate explanation to get your application up and running in no time.



# 11. Mechanical Dimensions



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For additional information on the  $\mu$ LCD-28PTU, please refer to the  $\mu$ LCD-28PTU Datasheet or visit 4D Systems website at [www.4dsystems.com.au](http://www.4dsystems.com.au)

If you require specific help with a 4D Systems product, information can be sourced from the FAQ and relevant forum threads on the website, or by contacting a direct member of our Tech Support team at 4D Systems at [support@4dsystems.com.au](mailto:support@4dsystems.com.au)

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