

## Introduction

This display adapter kit provides a simple way to connect a VGA display to a VM2D Application Board. The displays currently known to be covered by this adapter are:

- TX14D16VM1CPC

This adapter drives the touch screen using a built in Touch Controller (TSC2003), and controls the LED back-light (On/Off or Brightness control) using either a Digital or PWM output on the VM2D.

## Unpacking

This kit contains

- Display adapter board 5913
- FFC (Flat Flexible Cable)
- Ribbon cable with connectors at each end
- Fastener pack

The fastener pack contains these items to fix the display to the adapter:

- 4 off M2.5 screws
- 4 off 7.5mm spacers

and these items to fix the adapter to the Application Board:

- 8 off M3 screws
- 4 off M3x12mm pillars

## Tools

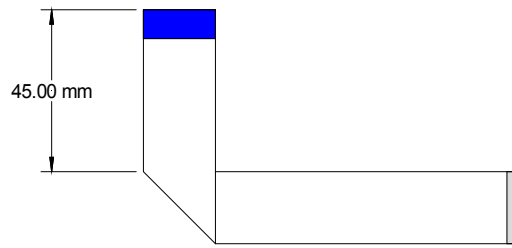
To assemble the kit you will need a small cross head screwdriver.

## Connecting the Display to the Adapter

1. Fold the FFC as in the diagram below.
2. Turn the display on it's back and fit the longer arm of the FFC (Flat Flexible Cable) to the fine pitch 40-way connector on the back of the display. The blue stiffener should be upper-most.
3. In current models you need to lift the locking tab on the connector using a fingernail, insert the FFC under the metal retaining finger (contacts down), and then press the locking tab back down.
4. Using the M2.5 screws and plastic spacers provided, fix the display adapter board to the display. Take care to use the smaller, 'inner' set of holes on the adapter board.
5. Fold the FFC around the cut-out in the display adapter board.
6. Fit the shorter arm of the FFC into the connector on the display adapter board.
7. Plug the display's back-light connector into the socket provided
8. Plug the display's touchscreen FFC into the socket provide. You will need to pull the locking mechanism out first, then push it back to lock the FFC in place. It's usually best to tuck the extra length of the touch-screen FFC between the display and the adapter PCB.

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Folded cable

## Connecting the Adapter to the Application Board

Use the supplied 40-way ribbon cable to connect the adapter board to the application board.

If necessary, you can use the M3 screws and 12mm pillars provided to fix the display to the back of the application board.

Note that we have fitted the strain relief to the ribbon cable connector to make it easier to remove. However this means it sits proud of the display by a few millimetres, which will interfere with panel mounting. If this is a problem you can cut off the strain relief or make your own cable.

## Mounting options

This adapter is intended to be used in two physical orientations relative to the Application Board.

1. During development it may be laid to one side of the Application Board, allowing you to see the display and at the same time access the Application Board, VM2, etc.
2. When mounted in a panel, the adapter can fold round to the back of the Application Board and be fixed to it with screws and pillars to form one unit.

## Power supply

**You must power the Application Board from 12VDC when using this adapter in its default configuration.**

The display adapter normally draws its power for the LED back-light from a 12VDC supply via the Application Board it is connected to.

Application Boards tend to use a series Silicon diode to guard against accidentally connecting the supply voltage in reverse. This will cause a slight dimming of the back-light. You can short this diode if you want to (D2 on the 5902), or drive the Application Board from a slightly higher voltage.

## 24V supply option

It is possible to power this adapter (and so the Application Board) from higher voltages, such as 24V, by fitting a Switch Mode Regulator to the display adapter. A suitable device is an R-7812-0.5, which should be fitted to position U3. You should unlink LK2 if you fit U3.

## Mechanical

The adapter mounting holes are exactly the same as the standard application board: 4 off 3.5mm diameter on a 140mm x 90mm rectangular pitch.

The diagram below shows the relationship between the TFT module mounting holes and the adapter mounting holes.

