

■ Hardware description

The combination of your **PDB554-6** daughter board and your **PDS51-Mk2A** mother board produce a very powerful, fully featured, real time development System for the new Philips 552 & 554 6 & 12 clock series of microcontrollers. By using the 40pin DIP header supplied, standard 8xC51 devices may also be emulated.

■ Installation / Removal

The **PDB554-6** is one of a new series of 6/12 clock daughter boards with a PLL crystal oscillator and is for use only on a **PDS51-Mk2 or Mk2A** mother board

Prior to installing the **PDB554-6** daughter board ensure that all power sources are removed from the mother board.

Fit the Board carefully into the sockets on the mother board and push firmly home.

Attach the header cable and plug and apply power to the **PDS51-Mk2A/PDB554-6** emulator.

To remove the daughter board carefully rock and lift the board while firmly holding the mother board in your other hand. As both the **PDS51-Mk2A** mother board and **PDB554-6** daughter board contain static sensitive devices, please store these products in anti static bags in a dust free environment.

■ Footprint Adapters

Each emulator daughter board is supplied with a suitable emulation cable and Header Plug assembly. The **PDB554-6** is supplied with a 68pin PLCC header Plug and a 40 pin DIP header for emulation of 8xC51 devices. A 64pin LQFP header is available under part number PDA64LQFP.

■ Bondout Oscillator

The emulation frequency of the **PDB554-6** bondout microcontroller is set under software control by the IDE operating system under Options:Debugging - Emulation Speed

Do not replace the 12MHz crystal on the daughter board.

The normal operating range for this daughter board is 3 MHz to 30.00 MHz in 12 clock mode. This is equal to 1.5 MHz to 15 MHz in 6 clock mode

It is not possible to use the clock on your target board to drive this emulator, however, by using the daughter board jumper "J1" a signal may be sent down to the target board from the emulator.

It is not possible to use the Xtal on your target board.

■ Reset Button

The **PDB554-6** daughter board has a "reset" button near the bottom right corner. This should only be required if your entire system locks up. The reset button will preform a total restart of the system. A successful reset is indicated by the sign-on message in the following format:

PDS51 S/W 2.06 PCB 2.02 DB554-6 2.0 PML 654321 Bondout 8xC554

This line of information gives the current version numbers of the mother and daughter board and should be included in any correspondence on this product.

■ Trace Blocks

The **PDB554-6** daughter board is supplied with several simple means of tracing port pins to and from your target board.

1. By using the top left hand 8 TR0 trace blocks on the **PDB554-6** daughter board, you may easily trace the signals on ports 1.0 to 1.7 or ports 2.0 to 2.7 by fitting the jumper blocks as required from the centre trace pin to the required port pin in any combination required. If you do not wish to trace these port pins, the jumpers may be removed and instead, a wired jumper lead may be attached to the centre of the trace block pins and flywired to the required connection on your target board. (10 coloured trace leads are supplied with each **PDS51-Mk2A** mother board)

2. Using the trace block TR1 on the bottom set of 4 pins of the **Trace block**, you may also directly trace certain other port pins. With the jumpers to the left it is possible to trace port pins P0.2 to P0.5. With the jumpers to the right it is possible to trace port pins P3.2 to P3.5. As with trace block TR0, if you do not wish to trace these port pins, trace leads may be connected to the centre of the block pins and the leads connected to your target board.

3 pins on the bottom of the trace block are connected to ground.

Although the trace pins are well protected, do not exceed the emulation Vdd voltage +10% as damage to the emulation system may occur.

■ DB Extensions

On the left hand side of the **PDB554-6** daughter board there is a five pin header block that adds four further functions to the emulation system.

● FT

The **FORCE TRACE** input allows the user to selectively trace execution with reference to a hardware event. All traceable information is unconditionally written to the trace buffer while this pin is pulled low.

● BP

A low level on the External **BREAKPOINT** pin will cause the emulation system to break execution when the address set in the IDE (Setting:External Breakpoint) is executed.

● ET

The **EXTERNAL TRIGGER** pin is used to produce an output which may be used to synchronise external test equipment to the code being executed. This output will go high while executing from the address specified by the IDE (Settings:External trigger).

● EM

The **EMULATION** output goes low when ever the code is being executed. The **EMULATION LED** is also connected to this output to provide visual indication.

The FT and BP inputs are active low TTL level inputs terminated with 47K resistor and diode clamped to the **PDS51-Mk2A** +5 Volt supply. The ET and EM outputs are 5 Volt CMOS.

■ A/D Reference voltage selection

The 8xC552 and 554 A/D ports also have an AVdd reference pin and an AVss ground pin. This daughter board has an additional 2 sets of jumper blocks (see diagram below).

The AVdd three way jumper is used to select either AVref (down the connecting cable from your target board) or to connect AVdd to the +5 Volts of the daughter board.

The AVss pin is always connected down the cable to your target board AVss. When the AVss jumper is in place, it will also connect the AVss lead to the daughter board ground.

General Notes

■ Bondouts

A special 85C554-6 bondout in a 68pin PLCC package is used in this emulator.

■ Watchdog Timer

The watchdog timer is supported on this daughter board.

■ ALE

The ALE signal is fundamental to the operation of this daughter board and therefore must not be turned off.

■ Minimum Operating Frequency

Although the new 554-6 device has a static core and may be run at 0 Hz (stopped) the emulator requires that the minimum frequency is set to 3MHz in 12 clock mode or 1.5 MHz in 6 clock mode.

■ Operating Voltage

The operating voltage for the **PDS51-Mk2A and PDB554-6** emulation system is supplied from a universal 5 Volts power supply. The emulator will only emulate at 5 Volts + or - 10%.

■ General warning

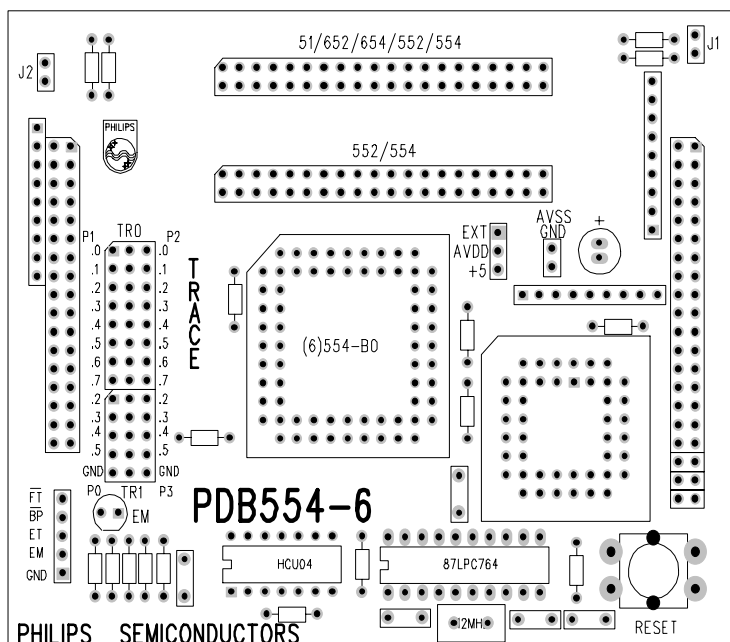
All port pins are either connected directly to the emulator bondout device or to regenerated port devices. It is therefore very important not to apply voltage levels over Vdd +10% from your target board to these pins or damage will occur.

As the port pins have a very high "sink" capability, just like a real Microcontroller, it is important not to hold a port pin hard low and then tell the software to drive it high. Excess current will flow and damage will occur.

Both types of port pin damage are easily diagnosed by our engineers and the Emulator warranty will not cover such repairs.

■ Warranty

Our PDS51-Mk2A mother boards and PDBxxx daughter boards are guaranteed for a period of 12 months from the date of sale and will be repaired or replaced as required. This guarantee does not cover damage caused by over voltage or over current caused by an external source, physical damage, or any modifications applied to the emulation system.



■ Daughter Board Jumpers

| | |
|------|------------------------------|
| J2 | Factory test only |
| J1 | Xtal output to target board |
| AVss | AVss pin to ground |
| AVdd | AVdd pin to target or to +5V |

■ For the latest up to date information on our Philips Emulation and Programming products, please visit our web site:

www.pds51.com