

# PDS51-Mk2A

## FEATURES

- Supports Philips 8xC51 family
  - Universal motherboard
  - Bondout dependant daughterboard
  - In-Circuit emulation
  - No stolen resources
  - 64K emulation code space
  - Hardware breakpoints (64K) on:
    - Fetch address
    - Fetch address and external signal
  - Real-time trace (28K frames)
  - Traced information:
    - Fetch Address
    - 12 External trace probes
    - Control info (inta, c1)
  - Conditional trace on:
    - Fetch address
    - External signal
  - RS232 interface to PC
  - Integrated Development Environment:
    - Windowed interface
    - Pull down menus
    - Borland style keystrokes
    - Symbolic or Source level debugging.
- File formats supported:
- TASKING
  - KEIL
  - Raisonance
  - IAR
  - Archimedes
  - Metalink
  - Intel Hex
  - HITECH
  - OMF51
- On-line help:
  - context sensitive, hypertext style.

The PDS51-Mk2A may be ordered from  
Philips Semiconductors or their distributors  
under part number:

PDS51 SD

9351 719 40112

## Description

The PDS51-Mk2A is a board-level, fully featured, 30 MHz + (maximum emulation speed depends on actual daughter board) In-Circuit Emulator for the Philips 8XC51 family of Microcontrollers. It allows the user complete access to the internal registers and full execution control with no chip resources being consumed. This means that the microcontroller in the target system can be replaced with the PDS51-Mk2A enabling the target system to be easily run, monitored and debugged without any changes to code or hardware. The PDS51-Mk2A is supplied with sufficient memory to enable emulation of the complete 64K of directly addressable code memory and a 28K frame by 32 bit wide, real-time trace buffer.

The PDS51-Mk2A system consists of two interconnected modules. One board (the motherboard), contains the systems that are common to any derivative emulation such as the control microcontroller, logic, communication interface and power supply. The second board (the daughterboard), contains the bondout microcontroller which determines the target devices able to be emulated. Most daughterboards are able to emulate more than one derivative, thereby enhancing system flexibility with minimal expense.

External breakpoint and trace control inputs, along with emulation running and fetch address controlled output trigger signals, are provided for interfacing and synchronising to external equipment.

The PDS51-Mk2A is controlled via an RS232 serial interface by a PC running the 32bit Windows (95,98, 2000, NT) IDE debugger supplied. The Integrated Development Environment is a windowed command and display environment which runs on 486 or Pentium based computers. The PDS51-Mk2A emulates at  $5V \pm 10\%$  using an external 5.0V 1.5A DC power supply which has a universal input voltage range of 90 to 260 Volts A.C.



PDS51 shown with Daughter Board

## SPECIFICATIONS

- **Emulation:**
  - 64K bytes of code space
  - In-circuit emulation via bondout
  - No stolen resources
  - Real time
  - Universal motherboard
  - Bondout dependant daughterboard (each emulating several derivatives)
- **Trace Memory:**
  - 28K frames deep, 32 bits wide
  - 16 bit program address
  - 12 bits of port lines or user signals
  - External probes sampled S5P1
  - Control info (C1, INTA)
  - Trace input filtering on the fetch address
- **Breakpoints:**
  - Hardware implimented
  - Up to 64K on program fetch addresses
  - Up to 64K on external signal input AND specified program fetch address
- **Integrated Development Environment:**
  - Requires:
    - 486 or Pentium computer running Windows 95, 98, 2000, or NT.
  - File Formats Supported with Symbolic or Source-Level Debugging:
    - TASKING, Raisonance, KEIL, IAR, Archimedes, Metalink, HITECH, Intel Hex, OMF51, and more.
  - Windowed environment with resizable panes:
    - HLL source or symbolic disassembly code
    - SFR resources
    - Internal/external RAM
    - Stack area
    - User watch variables
    - Pull-down menus
    - Keyboard control
    - Intuitive keystrokes and Borland compatible hotkeys
    - Fast hotkey access to user Editor/Assembler/Compiler applications
    - Data entry and display formats (examine/modify):
      - Hexadecimal, Ascii, Binary, Signed and unsigned decimal IEEE floating point, Pascal string or 'C' string
  - Emulation Controls:
    - Reset bondout
    - Run from current program counter
    - Run from current program counter to cursor
    - Modify program counter
    - Single step (source-level line or assembly instruction)
    - Step over calls
    - Step into next call or procedure
    - Reposition cursor at address (or label selected from picklist)
    - Follow program without executing
    - Leave routine
- Trace Display:
  - Window into 28K frames of trace buffer
  - Fetch addresses
  - Symbolic code format
  - Status (fetch, dummy, inta etc.)
  - 12 external probes (boolean format)
  - Adjustable references for execution time calculation
  - 64K of trace ON/OFF settings (trace filter)
- Settings:
  - Breakpoints, external breakpoints, triggers, trace filters
  - all setable via specified address range, symbol picklist, or keybinding over 64K code space.
- On-line Help:
  - Context sensitive
  - Indexed, Hypertext style
  - 8051 architecture/instruction set
- **Interface Signals:**
  - Force Trace I/P pin
    - Overrides trace input filter
  - External Breakpoint I/P pin
    - Breaks on an external event.
    - Fetch address sensitive over 64K range (sampled S2P1)
  - Emulation Active O/P pin
    - Signals when program running
  - External Trigger O/P pin
    - Trigger O/P for synchronising external test equipment.
    - Fetch address controlled over 64K range (updated S2P1)
- **Speed:**
  - 3.5 to 30 MHz + (depending on actual daughter board)
  - no wait states
  - no stolen cycles
- **Serial Interface:**
  - RS232C
  - Packet protocol for data integrity
  - 9 Pin 'D' connector
  - Rxd/Txd jumper swappable
  - Automatic Port and Baud rate selection
  - serial cable supplied
- **Size:**
  - Motherboard with daughterboard
  - 130mm x 110mm x 40mm (L.W.H)
- **Environmental:**
  - Complies with European CE specifications
- **Emulation Voltage:**
  - 5 Volts  $\pm$  10%
- **Power Supply:**
  - 5V  $\pm$ 10% @700 MA. typical
  - Supplied with Universal power supply .
  - Input 90 to 260 Volts A.C. 40 to 60 Hz.
  - Output 5 V @ 1.5 A