VMC-8509

8085 Microprocessor Kit

8085 Microprocessor Kit with Accessories/Peripherals and Interfacing Devices.

SPECIFICATIONS

- In addition to normal specifications
- 8251 study card USART 8279 study card 8255 study card
- SRAM and DRAM interface card with converter card DMA Controller
- Battery Backup for RAM.
- Total on-Board memory expansion to 384 KB.
- 72 programmable I/O lines through 8255.
- Real time Clock interfaces.
- Three 16-bit Timer/Counter through 8253.
- RS 232C serial interface through 8251.
- USB Interface for PC Interface
- 8 different level of interrupt through 8259.
- 1 Mask able interrupts.
- 8 non-maskable interrupt
- On-board A/D Converter
- On-board D/A Converter
- On-board Relay having 2 NO and NC contacts.
- On-board Opto Isolated input
- On-board 8 Digital inputs
- On-board 8 Digital Outputs
- On-board Temperature Sensor
- On-board Traffic light controller
- On-board Printer Interface
- 20*2 LCD Display (40x2 optional)
- 104 Keys IBM Compatible
- Key Board (USB)
- Two modes of Commands key board mode and serial mode.
- All address data and control lines available at FRC connector as per multi-Bus.
- Facility for Down/Up loading files from/to PC
- With Built in Power Supply

VMC-8609

8086 Microprocessor Kit

8086 Microprocessor Kit With Accessories/Peripherals

SPECIFICATIONS

- Compatible with 8088 Microprocessor (8 bit)
- Provision to add 8087 Co- processor & 8089 I/O Processor.
- 256 KB of CMOS RAM using 62256
- 512 KB of EPROM loaded with monitor expandable further using 27512.
- Battery Backup for RAM.
- Total on-Board memory expansion to 384 KB.
- 72 programmable I/O lines through 8255.
- Real time Clock interfaces.
- Three 16-bit Timer/Counter through 8253.
- RS 232C serial interface through 8251.
- USB Interface for PC Interface
- 8 different level of interrupt through 8259.
- 1 Mask able interrupts.
- 8 non-maskable interrupt
- On-board A/D Converter
- On-board D/A Converter
- On-board Relay having 2 NO and NC contacts.
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- On-board Printer Interface
- 20*2 LCD Display (40x2 optional)
- 104 Keys IBM Compatible Key Board (USB)
- Two modes of Commands key board mode and serial mode.
- All address data and control lines available at FRC connector as per multi-Bus.
- Facility for Down/Up loading files from /to PC.
- With Built in Power Supply.
- 8251 study card USART 8279 study card 8255 study card
- SRAM and DRAM interface card with converter card DMA Controller

Note: Images given are for representation only and the final equipment can change according to its specifications.

VMC-31/51LCD

Microcontroller Development Board

SPECIFICATIONS

- Microcontroller: 8031/8051/8751/89C51compatible
- Main RAM: 32KB(62256)
- Monitor ROM: 32KB(27256)
- Display Unit: LCD(16x2 Line)
- I/O Port: CPU I/O Port, 8255Ax 2
- Dot Matrix LED: 8x8
- Keyboard: 16 keys for data, 8 keys for function
- Integration and Development Environment Program
- Display 8051 internal architecture or Equivalent
- Source code editing, assembling, compiling and program writing
- Code memory disassemble
- 8051 Register, internal/external memory dump and editing function
- Source level debugging function
- Pop-up menu and 89C51 WRITE function
- A/D, D/A Converter facility
- D.C. Motor and Photo Interrupter sensor
- Speaker and Step Motor Interface Circuit
- Expansion Connector System bus
- Minimum 40 pins text tool
- Power sce: 220V AC ±10%, 50 Hz
- Accessories: Software CD,
- PC interface cable and Instruction Manual

VPL-ADV-8051

Advance 8051 Microcontroller Trainer Kit

SPECIFICATIONS

- CPU: Philips 89V51RD2 Microcontroller with clock frequency@11.0592MHz.
- Four Seven Segment Displays
- 16x2 LCD Display Interface
- Graphical LCD Interface
- EWSN Status LED's 8 Nos.
- 8 Channel ADC Interface
- DAC 0800 Interface
- LED Matrix Interface
- 4x4 Matrix Keyboard Interface
- PS2 Keyboard Interface
- Traffic Light Interface
- Stepper Motor Controller interface with stepper motor
- Buzzer Interface
- PWM & Interrupt Interface
- Eight Data Switches
- LM35 Temperature Interface
- IR Interface
- Relay
- Opto
- Real Time Clock with battery backup
- At24C16 Serial EEPROM
- USB Interface
- RS-485 Interface
- RS-232 Interface using Rx/Tx of MCU for uploading/downloading
- On-chip Flash Program Memory with ISP and IAP capability
- ADC,DAC interfacing card Elevator Interfacing Card
- Temperature loop interface card

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VPL-GPB

All-in-One General Purpose Board

SPECIFICATIONS

- The All-in-one GPIO board is specially designed to suit the experimentation of different GPIO devices with the micro controllers
- Itincludes 8 LED
- 16x2characterLCD
- 2 digit 7-segment display Switches includes 4 general purpose keys
- 2x2 matrix keyboard
- I2C based EEPROMs for protocol demonstration experiments
- SPI based EEPROMs for protocol demonstration experiments
- Stepper motor interface facility DC Motor interface
- Relayoutput
- Facility to provide 2 channel ADC input using potentiometer and unity gain amplifier for protection
- Useful resource to learn basic programming techniques to interface basic GPIO components to the controller.
- **GSM Modem with enclosure:**
  - GSM modem with serial communication interface
  - Standard RS-232 interface using DB9 connector provided for communication
  - Controlling through AT commands.
  - Modem can be linked to a PC, micro-controller or DSP based embedded system for sending SMS.
  - Data circuit asynchronous, transparent and non- transparent upto 14400 bits/s and baud rate of 30to 115,200 bits/s metal enclosure case
  - Powersupply–12VSMPS power supply
  - SIM800 modem
  - Can be used for curriculum projects involving Pre-stored messaging, Remote home appliance control, Industrial alarming system, Automatic Meter Reading(AMR), Security Systems,Remote Data logging and reporting, Low cost router, Remote monitoring of Vending machines etc.
- **Finger print module with enclosure:**
  - Image acquiring time - <0.5s
  - Storage capacity – 256
  - FAR-<0.001%
  - Average searching time - <1s
  - Working environment – (-10 to 40) Degree C
  - Working current – 100mA peak
  - Matching mode - 1:1 and 1:N
  - Character file size – 256
  - Interface–UART
  - Templatesize–512bytes
  - Power supply through 2pin relimate connector
  - UART Relimate Connector to TTL signal
  - Power Supply Connector
  - USBB-B Power Supply Connector
  - UART DB9 Connector
- **RFID Interface Module with enclosure:**
  - Long read range
  - Small outline
  - Wide voltage range: 9 V DC regulated, linear
  - Interfaces: RS232
  - Read Range: Up to 5 cm
  - Frequency: 125KHz
  - Format: 64 bits, Manchester coding
  - Transponder: Read only
  - Encapsulated in acrylic enclosure case

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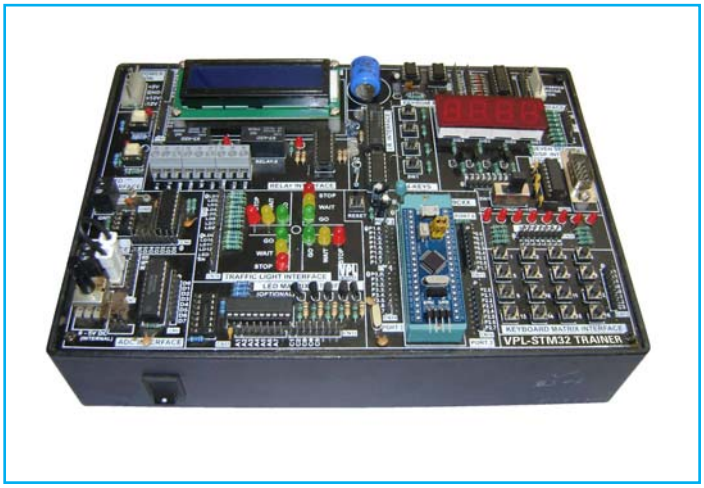
VPL-STM32

Embedded AI-Enabled Development Platform & Wireless Communication Modules



SPECIFICATIONS

ProcessingUnit

- MCU: STM32N657X0
- CPU: Dual-core Arm® Cortex®-M7(480MHz)+ Cortex®-M4 (240 MHz)
- DSP& AI Acceleration:
- FPU(Floating Point Unit) for high-speed DSP computations
- CMSIS-DSP and CMSIS-NN support for machine learning
- Tensor Flow Lite for Microcontrollers compatibility

Memory & Storage

- RAM: 1MB SRAM + 512KB
- TCM (Tightly Coupled Memory)
- Flash Storage: 2MB embedded Flash
- External Storage: Micro SD card slot, QSPI NOR Flash (128MB)

Connectivity

- Ethernet: 10/100 Mbps
- Ethernet with hardware TCP/IP
- Wi-Fi & Bluetooth: External module support via UART/SPI
- USB Ports:
  - 1x USB 2.0 OTG (Host/Device)
  - 2x USB 2.0 Host Type-A
- CAN Bus: 2x CAN FD for automotive/industrial applications
- UART, I2C, SPI, GPIO: Multiple I/O interfaces

Display & Camera Interface

- Display Output: MIPI DSI forLCD (Optional Display Panel)
- Camera Interface: MIPI CSI-2 (Supports up to 2 cameras simultaneously)

Expansion & I/O

- GPIO Header: 40-pin expansion connector (Raspberry Pi HAT compatible)
- STMod+ Connector: Supports additional sensor modules
- PCIe Expansion: M.2 Key E for Wi-Fi/Bluetooth modules

Power Supply & Efficiency

- Input Power: 5V/3A via USB-C or external power supply
- Low-power modes: Dynamic voltage scaling, deep sleep mode

Operating Environment

- Temperature Range: -40°C to +85°C (Industrial-grade)
- Cooling: Passive heat sink, supports active cooling fan

Operating System & Software Support

- OS Support: Bare Metal, FreeRTOS, Zephyr RTOS
- DSP & Edge AI Support: Tensor Flow Lite, CMSIS-DSP, CMSIS-NN
- Programming Languages: C,C++, Python, MATLAB
- Security Features: Secure boot, Trust Zone, AES encryption

Controller & Programming Environment

- Software Development Kit: STM32CubeMX, STM32Cube.AI, Free RTOS, Zephyr
- Programming Languages: C,C++, Python
- Real-time Processing: Cortex- M4 for low-latency DSP tasks
- Machine Learning Support: TensorFlow Lite, Edge Impulse
- Industrial Protocols: Modbus, CAN FD, RS-485, Ethernet TCP/IP

Additional Components & Accessories

- Pre-installed Display Panel: MIPI DSI touchscreen LCD
- Onboard Audio Codec: Stereo
- DAC for audio processing
- Expansion Modules: STMod+ for additional peripherals (Wi-Fi, sensors)
- Debugging Support: JTAG/SWD, ST-Link interface WIFI / BLE Module
- Ultra-Low Power Consumption: Designed for battery-powered IoT devices, ensuring extended battery life.
- Integrated SoCs:
- DA16200: Handles Wi-Fi connectivity with low power requirements.
- DA14531: Manages Bluetooth LE operations efficiently.
- P mode Interface Compatibility: Easily integrates with various development platforms that support the Pmod standard.
- Coexistence and Provisioning: Features seamless Wi- Fi/ Bluetooth LE coexistence and supports Wi-Fi provisioning through the Bluetooth LE connection.

Applications & Experiments

1. AI-based Voice Recognition using MFCC
2. AI-powered Edge Vision Processing
3. AI-based people counting and tracking
4. AI-based detection of exoskeleton movement

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