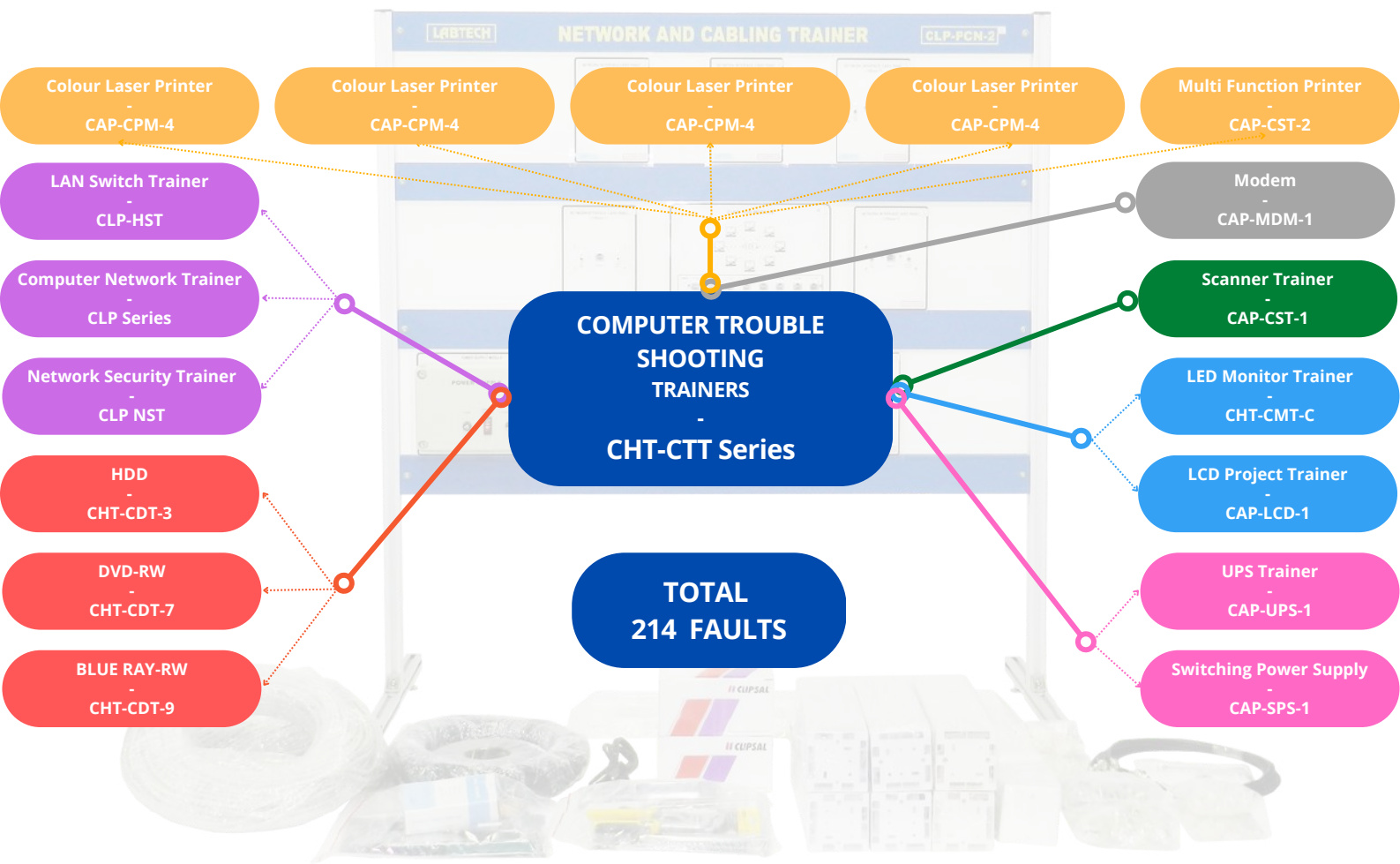


Making Technology Visible

COMPUTER HARDWARE AND NETWORK TECHNOLOGY TRAINING SYSTEMS



Also Featuring Classroom 21 System for Blended Learning



LABTECH PROFILE

LABTECH – the International Technical Educational Company

LABTECH was formed over 30 years ago and is one of the largest Technical and Vocational educational systems designers and manufacturers in the world. Labtech's prime focus is to provide comprehensive 21st century skills infused technical and engineering learning solutions for Vocational Technical Schools, Polytechnics, Universities and Training Institutions. The development of LABTECH has been guided by professional educators from North America, Europe and Asia that have many years of experience in the field of international education.

Our Systems Approach design philosophy of "Making Technology Visible" is based on modular learning platforms and exposing key functional systems so as to clearly demonstrate the underlying technologies. We allow students to get close to technology by adopting a "hands-on" approach to training that combines theory as well as practical experiments. The result of this is that students have a clearer understanding of how technology works and its applications to industry and the work place. Many of our trainers have Fault Insertion systems that simulate common real-world faults with troubleshooting solutions facilitating real hands-on skills. Our Modular educational approach enables us to create systematic integrated solutions for varying syllabus levels, ranging from occupational skills standards and upwards to university degrees in engineering.

LABTECH has developed over 1.000 major training products which form a systematic educational program and we have exported these to over 90 countries worldwide. The technical training systems that LABTECH manufactures are made to International standards of quality and we are ISO 9001 certified in eight areas including educational research and development. LABTECH has a comprehensive R&D department and a sophisticated range of manufacturing equipment. LABTECH can assist training institution or projects by offering a complete service for equipping technology workshops or laboratories in our key technology areas including provision of training systems, educational aids, models, support tools and testing equipment.

Our training manuals are comprehensive teaching and learning guides which are student-centric and oriented for self-studies. The manuals include information on applied theory; related engineering information; set-up & operation; skills focused experiments; schematics & diagrams; along with troubleshooting solutions. We have active cooperative programs with leading educational and industrial institutions within our region who work together with us in our product research and development. Our trainers incorporate the latest technology so that education may keep pace with the changing economy.

Our manufacturing base is strategically located in a Free Trade Zone location on Batam Island nearby Singapore which allows us to easily ship all over the world. We also have marketing and distribution offices in Singapore, Malaysia, Jakarta, Australia, UK, and Jordan in order to facilitate communications, service support and financial transactions with our customer's world wide. We also have representatives in dozens of countries who act as our local partners on project implementation. Our unique international corporate structure allows us to globally market high quality products and services at reasonable costs.

Industry & Technology Partnerships and Memberships

Labtech has a network of industry and technology partners that enables us to widen our product offerings and better align our objectives with the end result of producing employable skills. Partnering with some of the most innovative technology companies in the world, including Microsoft and Intel. We are also members of ISTE (International Society of Technology in Education), CompTIA (Computing Technology Industry Association), IVETA (International Vocational Education & Training Association), Worlddidac. We also produce training systems for Toyota and for Schneider Electric This global network makes us uniquely aligned to meet the needs of educational institutions around the globe.



INTRODUCTION

Computer Information Technology

Labtech produces one of the most comprehensive lines of training equipment for Information Communication Technology. Computer training is always a challenge, as the technology is advancing so rapidly. The Labtech product lines are updated every year to bring the latest technology to the classrooms.

Our trainers focus on providing relevant skills to computer hardware and software technicians and engineering students. They cover all aspects of computer assembly, Troubleshooting, Diagnostics, Maintenance and Repair. The training courses follow closely to the "A+" and "Network+" Certification Standards from CompTIA, which have become the world's benchmarked standards for IT training.

CLASSROOM 21 CMS-21st CENTURY EDUCATIONAL PLATFORM FOR BLENDED LEARNING

Classroom Management System and Language Laboratory

Classroom 21 CMS is 21st Century learning platform from Labtech that addresses the growing needs of educators to control multimedia labs and enhance their use and educational value. It is a modular software system that can be expanded from a comprehensive classroom management system (CMS) into a full featured language lab that is second to none. The Classroom CMS emulates many Web 2.0 technologies such as chat and video conferencing (Skype) without having to utilize the internet. It is a true 21st Century Educational Platform that can control the classroom, regulate access to the internet, and also launch educational programs and learning activities. The program is available in a number of upgradable formats.

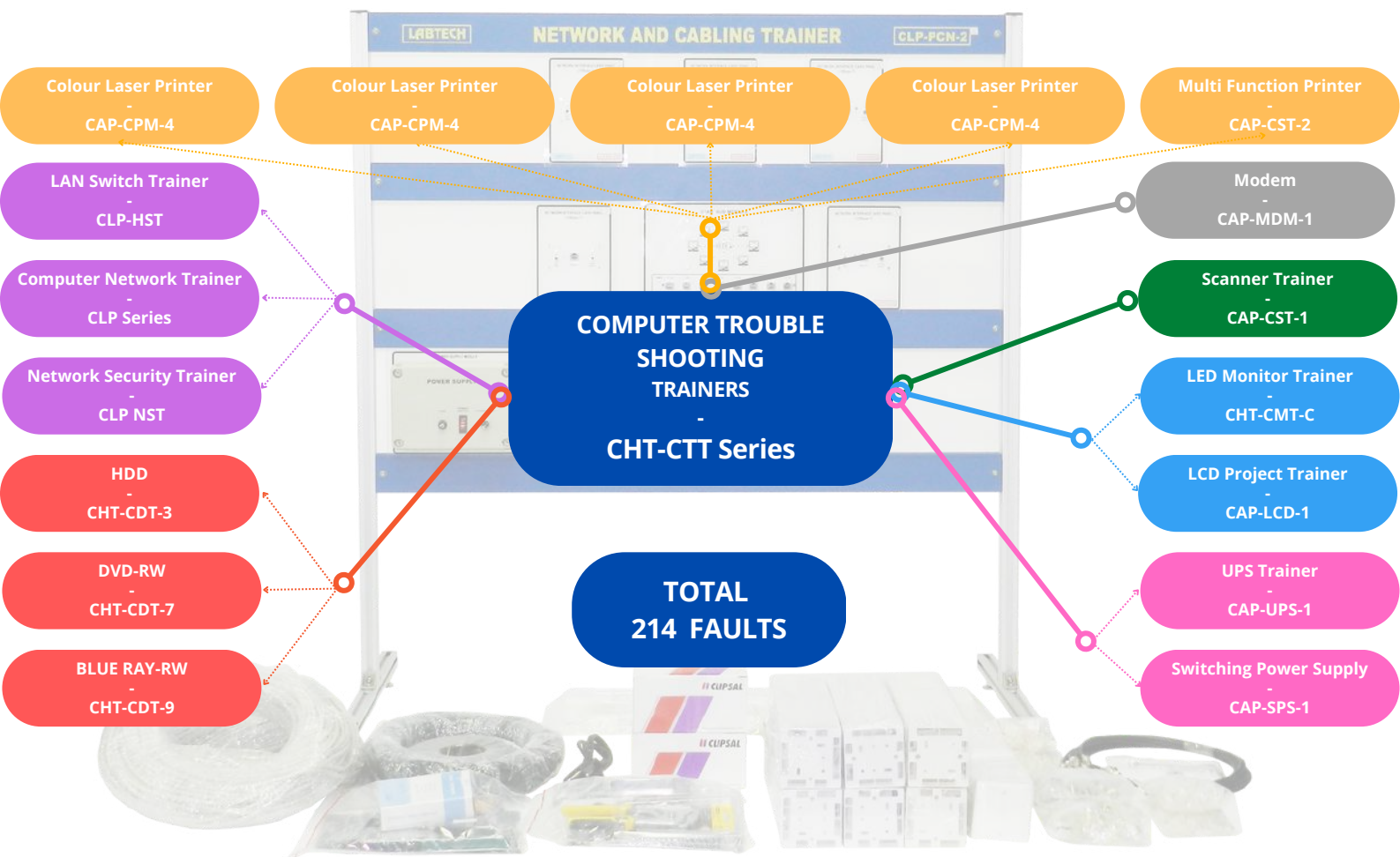


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CHT - COMPUTER HARDWARE TECHNICIAN





COMPUTER TROUBLESHOOTING TRAINER

Model Number : CHT-CTT

Educational Objectives:

- Identify basic procedures for adding and removing field replaceable modules. Configure and apply BIOS setting.
- Identify motherboard components, their purposes, and properties.
- Differentiate among various CPU types and features and select the appropriate configuration.
- Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems.
- Given a scenario, use appropriate safety procedures.
- How to identify and use various types of preventive maintenance products and procedures.
- Explain environmental impacts and the purpose of environmental controls.
- Compare and contrast the features and requirements of various Microsoft Operating Systems.
- How to identify and use various types of preventive maintenance products and procedures.



LAPTOP TROUBLESHOOTING TRAINER

Model Number : CHT-LTT-1

Educational Objectives:

- Install and configure laptop hardware and components.
- Compare and contrast the components within the display of a laptop.
- Compare and contrast laptop features.
- Given a scenario, use appropriate safety procedures.
- Explain environmental impacts and the purpose of environmental controls.
- Explain the basic features of mobile operating systems. Compare and contrast methods for securing mobile devices.
- Given a scenario, explain the troubleshooting theory.
- Given a scenario, troubleshoot common problems related to common symptoms with appropriate tools.
- Given a scenario, troubleshoot operating system problems with appropriate tools.
- Given a scenario, troubleshoot common security issues with appropriate tools and best practices.
- Given a scenario, troubleshoot and repair common laptop issues, while adhering to the appropriate procedures.
- Understanding common Safety instruction for laptops.



SERVER TROUBLESHOOTING TRAINER

Model Number : CHT-STT

CHT-STT-W : Windows Base OS

Educational Objectives:

- Experiment with Power Supply, Processor, Bios Setting, Cooling System and Fan Controller, Optical Disk Drive, Esata, Network Device, Serial Port, Usb (Universal Serial Bus), Hard-disk, Vga.
- Configuring IP Address, Configure Ldap Using Yast, DNS Server, Samba Server.
- Configuring Printer Using Internet Printing Server (ipp) and Document Service.
- Managing Users, Group and Permissions, Firewall.
- Configuring DHCP Server, Web Server, FTP Server.
- Virtual Network Computing (VNC) Remote Administration, Virtualization With Xen, KVM.
- Raid 1 (disk Mirroring), Creating/Restoring A System Backup Using Yast.
- System Monitoring.
- Troubleshooting common problems.



LCD COMPUTER MONITOR TRAINER

Model Number : CHT-CMT-L

The teaching program is designed to follow the service procedures as recommended by the manufacturer and uses the factory service manual in conjunction with student job sheets along with a text on servicing and theory. Each trainer comes with complete courseware as follows: Factory service manual with detailed circuit board schematic diagram and Student job sheets with fault guide and wiring diagram.

Educational Objectives:

- Understanding history computer LCD display.
- Knowledge of computer LCD display theory, block, and circuits.
- Understanding AC to DC Switching power supply, VGA input circuits.
- Understanding differentiate transmitter and receiver circuits.
- Understanding of Pixel control, Rows and Columns refreshing, Back lit circuits, control, and Safety concern.
- Troubleshooting common problems.

LED COMPUTER MONITOR TRAINER

Model Number : CHT-CMT-L2

The teaching program is designed to follow the service procedures as recommended by the manufacturer and uses the factory service manual in conjunction with student job sheets along with a text on servicing and theory. Each trainer comes with complete courseware as follows: Factory service manual with detailed circuit board schematic diagram and Student job sheets with fault guide and wiring diagram.

Educational Objectives:

- Understanding history computer LED display.
- Knowledge of computer LED display theory, block, and circuits.
- Understanding AC to DC Switching power supply, VGA input circuits.
- Understanding differentiate transmitter and receiver circuits.
- Understanding of Pixel control, Rows and Columns refreshing, Back lit circuits, control, and Safety concern.
- Troubleshooting common problems.



DISK DRIVE TRAINER (FLOPPY)

Model Number : CHT-CDT-1

Educational Objectives:

- Familiarization with HDD/optical device used by computer system.
- Familiarization disk drive hardware, component and features.
- Familiarization disk drive format standard.
- Familiarization disk drive burning progress.
- Disk drive organization, partition arrangement, file recovery concept.
- Understanding disk drive block diagram.
- Understanding disk drive fault symptom.
- Disk drive troubleshooting the power supply.
- Disk drive troubleshooting the loading motor.
- Disk drive troubleshooting the slide motor.
- Disk drive troubleshooting the spindle motor.
- Disk drive troubleshooting the motor driver.
- Disk drive troubleshooting the RF amplifier.
- Disk drive troubleshooting the interface.



DISK DRIVE TRAINER (HARD DISK)

Model Number : CHT-CDT-3

Educational Objectives:

- Familiarization with HDD/optical device used by computer system.
- Familiarization disk drive hardware, component and features.
- Familiarization disk drive format standard.
- Familiarization disk drive burning progress.
- Disk drive organization, partition arrangement, file recovery concept.
- Understanding disk drive block diagram.
- Understanding disk drive fault symptom.
- Disk drive troubleshooting the power supply.
- Disk drive troubleshooting the loading motor.
- Disk drive troubleshooting the slide motor.
- Disk drive troubleshooting the spindle motor.
- Disk drive troubleshooting the motor driver.
- Disk drive troubleshooting the RF amplifier.
- Disk drive troubleshooting the interface.



DISK DRIVE TRAINER (DVD)

Model Number : CHT-CDT-6

Educational Objectives:

- Familiarization with HDD/optical device used by computer system.
- Familiarization disk drive hardware, component and features.
- Familiarization disk drive format standard.
- Familiarization disk drive burning progress.
- Disk drive organization, partition arrangement, file recovery concept.
- Understanding disk drive block diagram.
- Understanding disk drive fault symptom.
- Disk drive troubleshooting the power supply.
- Disk drive troubleshooting the loading motor.
- Disk drive troubleshooting the slide motor.
- Disk drive troubleshooting the spindle motor.
- Disk drive troubleshooting the motor driver.
- Disk drive troubleshooting the RF amplifier.
- Disk drive troubleshooting the interface.



DISK DRIVE TRAINER (DVD-RW)

Model Number : CHT-CDT-7

Educational Objectives:

- Familiarization with HDD/optical device used by computer system.
- Familiarization disk drive hardware, component and features.
- Familiarization disk drive format standard.
- Familiarization disk drive burning progress.
- Disk drive organization, partition arrangement, file recovery concept.
- Understanding disk drive block diagram.
- Understanding disk drive fault symptom.
- Disk drive troubleshooting the power supply.
- Disk drive troubleshooting the loading motor.
- Disk drive troubleshooting the slide motor.
- Disk drive troubleshooting the spindle motor.
- Disk drive troubleshooting the motor driver.
- Disk drive troubleshooting the RF amplifier.
- Disk drive troubleshooting the interface.



DISK DRIVE TRAINER (BLUE-RAY)

Model Number : CHT-CDT-8

Educational Objectives:

- Familiarization with HDD/optical device used by computer system.
- Familiarization disk drive hardware, component and features.
- Familiarization disk drive format standard.
- Familiarization disk drive burning progress.
- Disk drive organization, partition arrangement, file recovery concept.
- Understanding disk drive block diagram.
- Understanding disk drive fault symptom.
- Disk drive troubleshooting the power supply.
- Disk drive troubleshooting the loading motor.
- Disk drive troubleshooting the slide motor.
- Disk drive troubleshooting the spindle motor.
- Disk drive troubleshooting the motor driver.
- Disk drive troubleshooting the RF amplifier.
- Disk drive troubleshooting the interface.





DISK DRIVE TRAINER (BLUE-RAY RW)

Model Number : CHT-CDT-9

Educational Objectives:

- Familiarization with HDD/optical device used by computer system.
- Familiarization disk drive hardware, component and features.
- Familiarization disk drive format standard.
- Familiarization disk drive burning progress.
- Disk drive organization, partition arrangement, file recovery concept.
- Understanding disk drive block diagram.
- Understanding disk drive fault symptom.
- Disk drive troubleshooting the power supply.
- Disk drive troubleshooting the loading motor.
- Disk drive troubleshooting the slide motor.
- Disk drive troubleshooting the spindle motor.
- Disk drive troubleshooting the motor driver.
- Disk drive troubleshooting the RF amplifier.
- Disk drive troubleshooting the interface.

OPTIONAL ACCESSORIES FOR COMPUTER

Model Number : CHT-ACC

Computer service tool kits with 68 pieces in a soft tool case with zipper. Including precision screw drivers, small needle nose pliers, screw driver with interchangeable bit for all types including nut drivers (30 bits), wire stripper/crimper, soldering iron, part grabber, IC puller, IC in sorter, solder sucker, adjustable wrench, brush, solder assist tools, an-tistaic clip, alignment trimmers.



THE VISIBLE COMPUTER

Model Number : CHT-VCT

Educational Objectives:

- Courseware follows general basic Comp TIA A+ program elements
- Terms, concepts, and functions of PC component modules.
- Identification of basic components and how they operate and relate to each other.
- Identify common peripherals and how they integrate with the computer, associated cabling and their connectors.
- PC Assembly and Configuration.
- Identify proper procedures for installing and configuring peripheral devices.
- Identify hardware methods of how computers can be upgraded to improve system performance.
- Software types and review of their usage and applications.
- Basic Operating System configuration and usage.
- Identify basic common symptoms and problems.
- Basic Elements covered



A photograph of various computer peripherals. At the top left is a portion of a grey computer case. In the center is a large, dark, blank monitor. Below the monitor is a black keyboard with a wrist rest. To the right of the keyboard is a black mouse. At the bottom is a white external drive enclosure with five bays, each containing a drive with a red indicator light. A black power cord is plugged into the right side of the enclosure. The entire scene is set against a plain white background.

CAP – COMPUTER ASSEMBLY AND PERIPHERALS

COMPUTER SYSTEMS SERVICING TRAINER

Model Number : CAP-CAT-7 Pentium Computer Assembly Kit Trainer

Educational Objectives:

- Demonstrate the proper use of computer hardware and software
- Explain the characteristics and functions of internal and external storage devices
- Identify basic procedures for adding and removing field replaceable computer components.
- Explain the characteristics and functions of peripheral devices
- Identify common peripheral ports, associated cabling and their connectors.
- Understanding PC Assembly and Configuration.
- Understanding BIOS Setup and Configuration.
- Identify proper procedures for installing and configuring peripheral devices.
- Identify hardware methods of upgrading system performance, procedures for replacing basic and unique subsystem components and when to use them.
- Understanding Operational System (O/S) configuration and usage.
- Identify common symptoms and problems associated with each module and how to troubleshoot and isolate the problems.
- Recognize safety hazards and identify corresponding guidelines
- Identify preventative maintenance products, procedures, and how to use them



LAPTOP FOR ASSEMBLY SKILLS

Model Number : CAP-LST-7

Educational Objectives:

- Explain the differences between the various printer types and summarize the associated imaging process.
- Recognize printer components and its function: imaging drum, fuser assembly, transfer belt, transfer roller, pickup rollers, separate pads, duplexing assembly.
- Understanding printing processes : processing, charging, exposing, developing, transferring, fusing and cleaning.
- Install and Use appropriate printer drivers for a given operating system.
- Operate and set-up Print devices sharing.
- Sharing local/networked printer via Operating System settings.
- Perform maintenance processes : replacing toner, applying maintenance kit, calibration, cleaning.
- Perform troubleshooting on common faults found in Monochrome Laser Printer.
- Understanding Video control, engine Control and Safety concern.
- Understanding typical Laser printer block and circuit.
- Understanding of AC to DC power supply.
- Learning of Microprocessor control.
- Troubleshooting common problems.



LASERJET PRINTER TRAINER

Model Number : CAP-CPM-1

Educational Objectives:

- Explain the differences between the various printer types and summarize the associated imaging process.
- Recognize printer components and its function: imaging drum, fuser assembly, transfer belt, transfer roller, pickup rollers, separate pads, duplexing assembly.
- Understanding printing processes : processing, charging, exposing, developing, transferring, fusing and cleaning.
- Install and Use appropriate printer drivers for a given operating system.
- Operate and set-up Print devices sharing.
- Sharing local/networked printer via Operating System settings.
- Perform maintenance processes : replacing toner, applying maintenance kit, calibration, cleaning.
- Perform troubleshooting on common faults found in Monochrome Laser Printer.
- Understanding Video control, engine Control and Safety concern.
- Understanding typical Laser printer block and circuit.
- Understanding of AC to DC power supply.
- Learning of Microprocessor control.
- Troubleshooting common problems.



DOT MATRIX PRINTER TRAINER

Model Number : CAP-CPM-2

Educational Objectives:

- Set up the trainer and software installation.
- Troubleshoot electronic fault system and test points.
- Familiarize theory of Dot Matrix Printer operation.
- Learning safety factors when working on Dot Matrix Printers.
- Learning disassembly and reassembly of the printer.
- Learning printer service specification and DATA.
- Learning dot matrix printing process.
- Learning routine Maintenance Procedures.
- Learning common Servicing Problems.
- Learning fault insertion and troubleshooting.
- Learning test Points for troubleshooting exercises.
- Learning dot Matrix Printer Block Diagram.
- Learning dot Matrix Printer Circuit Schematic Diagram.



COLOR INK JET PRINTER TRAINER

Model Number : CAP-CPM-3

Educational Objectives:

- Set up the trainer and software installation.
- Electronic fault system and test points.
- Theory of Ink Jet Printer operation.
- Safety factors when working on Ink Jet Printers.
- Disassembly and reassembly of the printer.
- Printer service specification and DATA.
- Ink Jet printing process.
- Routine Maintenance Procedures.
- Common Servicing Problems.
- Fault insertion and troubleshooting.
- Test Points for troubleshooting exercises.
- Ink Jet Printer Block Diagram.
- Ink Jet Printer Circuit Schematic Diagram.



COLOR LASERJET PRINTER TRAINER

Model Number : CAP-CPM-4

Educational Objectives:

- Explain the differences between the various printer types and summarize the associated imaging process.
- Explain the differences between monochrome and color laser printer system.
- Recognize printer components and its function: imaging drum, fuser assembly, transfer belt, transfer roller, pickup rollers, separate pads, duplexing assembly.
- Understanding printing processes : processing, charging, exposing, developing, transferring, fusing and cleaning.
- Install and Use appropriate printer drivers for a given operating system.
- Operate and set-up Print devices sharing.
- Sharing local/networked printer via Operating System settings.
- Perform maintenance processes : replacing toner, applying maintenance kit, calibration, cleaning.
- Perform troubleshooting on common faults found in Color Laser Printer.



COLOR SCANNER TRAINER

Model Number : CAP-CST-1

Educational Objectives:

- Understanding the History and theory of Scanners.
- Knowledge of Typical scanner blocks and circuits.
- Learning about AC to DC switching power supplies.
- Learning about Controller circuits.
- Learning about Photo head position sensors.
- Learning about CCD sensors.
- Learning about Stepping motor circuits.
- Learning about DC to DC white LED drivers.
- Learning about Computer interfaces.
- Learning about Safety concerns.
- Troubleshooting common problems.

MULTIFUNCTION PRINTER/SCANNER/FAX/COPIER TRAINER

Model Number : CAP-CST-2

Educational Objectives:

- Set up the trainer and software installation.
- Electronic fault system and test points.
- Theory of Multifunction Printer/Scanner/Fax/Copier operation.
- Safety factors when working on Multifunction Printer/Scanner/Fax/Copier.
- Replacement cartridge method.
- Printer service specification and DATA.
- Multifunction/Scanner/Fax/Copier process.
- Routine Maintenance Procedures.
- Common Servicing Problems.
- Fault insertion and troubleshooting.
- Test points for troubleshooting exercises.
- Multifunction Printer/Scanner/Fax/Copier Block Diagram.
- Multifunction Printer/Scanner/Fax/Copier Circuit Schematic Diagram.
- OEM Manufacturer service manual.



COMPUTER MODEM TRAINER

Model Number : CAP-MDM-1

Educational Objectives:

- Familiarization of Computer Modem.
- Familiarization of Use Modem Terminal Program.
- Troubleshooting the Power Supply Fault.
- Troubleshooting the Phone Line Fault.
- Troubleshooting the Modem Control Fault.
- Troubleshooting the Transmit Data Fault.
- Troubleshooting the Receive Data Fault.



LCD PROJECTOR TRAINER

Model Number : CAP-LCD-1

Educational Objectives:

- Knowledge about the Basic Operation of LCD Projectors.
- Installation about the LCD Projectors.
- Operating The LCD Projector.
- Troubleshooting the Analog Video Input Fault.
- Troubleshooting the Lamp Thermistor Fault.
- Troubleshooting the Lamp Ballast Fault.
- Troubleshooting the Shutter Switch.
- Troubleshooting the Auto Iris.
- Troubleshooting the Remote.
- Troubleshooting the Power Switch.
- Troubleshooting the LED Control.



COMPUTER UPS TRAINER

Model Number : CAP-UPS-1

Educational Objectives:

- Familiarization of Computer UPS Trainer.
- Troubleshooting the Analog Video Input Fault.
- Troubleshooting the Lamp Thermistor Fault.
- Troubleshooting the Lamp Ballast Fault.
- Troubleshooting the Shutter Switch.
- Troubleshooting the Auto Iris.
- Troubleshooting the Remote.
- Troubleshooting the Power Switch.
- Troubleshooting the LED Control.



SWITCHING POWER SUPPLY TRAINER

Model Number : CAP-SPS-1

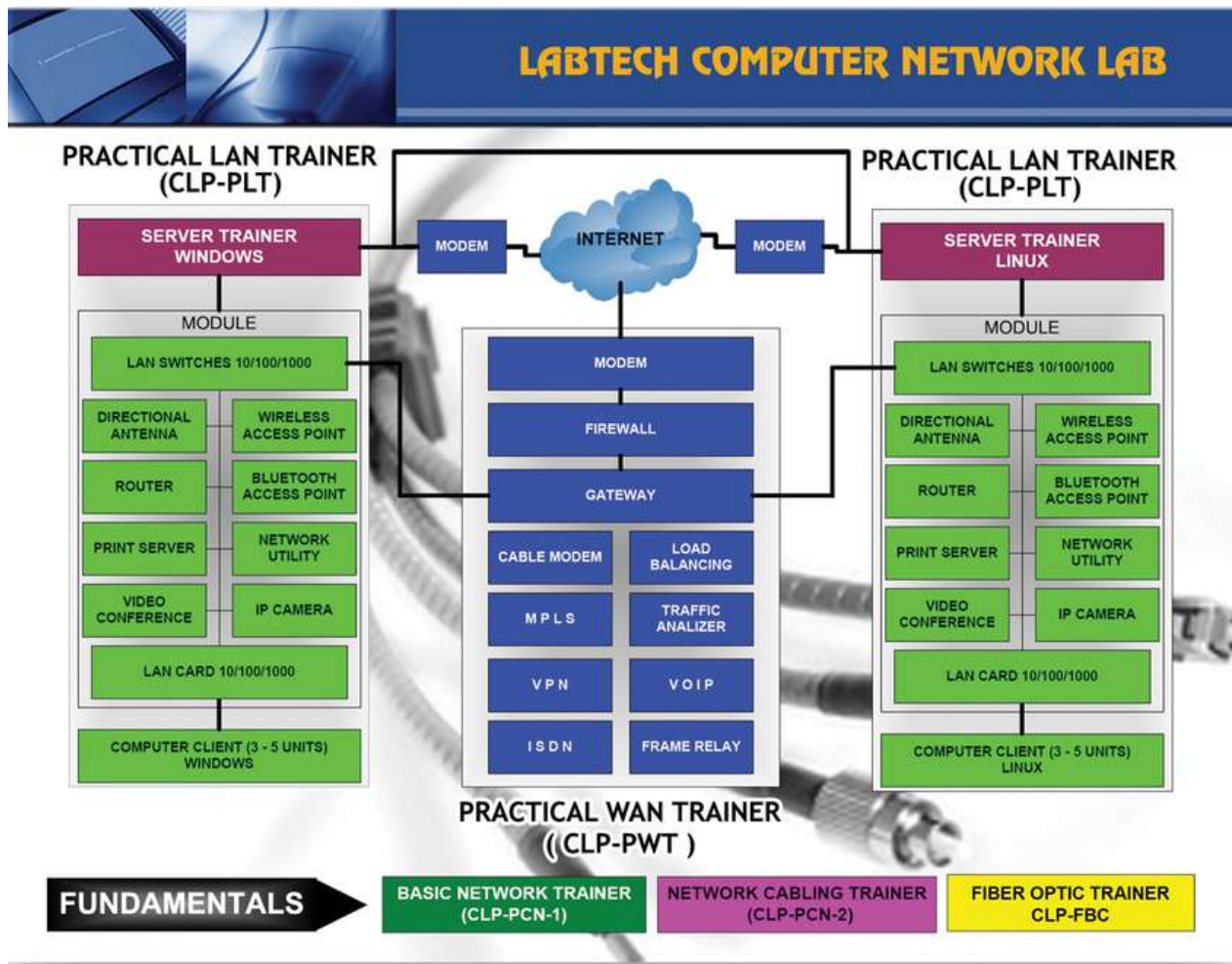
Educational Objectives:

- Familiarization of switching power supply & measuring test points.
- Troubleshooting the power +12V Circuit.
- Troubleshooting the power -12V Circuit.
- Troubleshooting the power +5VSB Circuit.
- Troubleshooting the power +5V Circuit.
- Troubleshooting the power +3.3V Circuit.
- Troubleshooting the PS ON Circuit.
- Troubleshooting the power Good Circuit.
- Troubleshooting the Opto Isolator Feed Back Circuit.
- Troubleshooting the PWM Controller Circuit.
- Troubleshooting the Diode Rectifier Circuit.





CLP - COMPUTER LAN TECHNICIAN

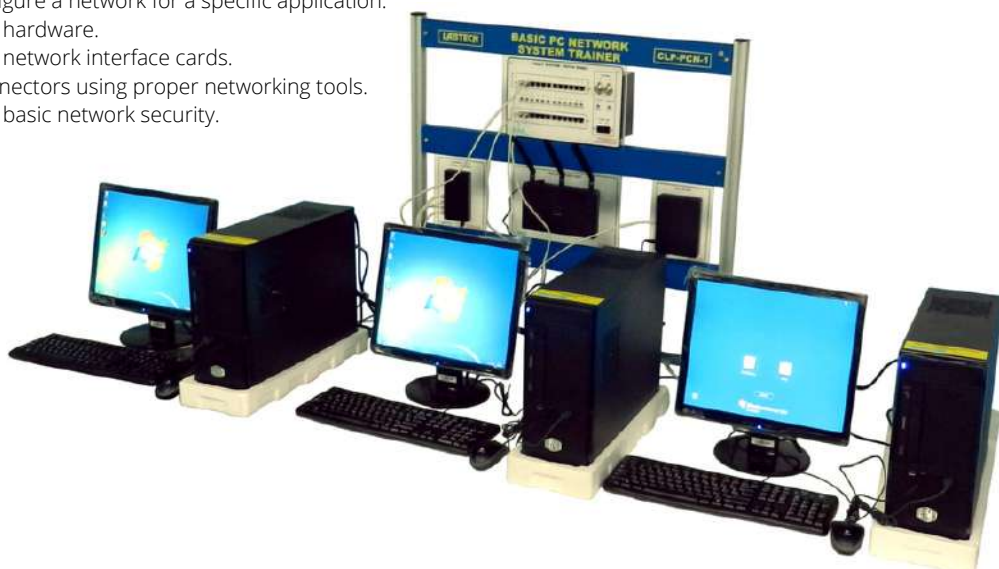


BASIC PC NETWORK SYSTEM TRAINER

Model Number : CLP-PCN-1

Educational Objectives :

- Comparing the advantages, disadvantages and characteristics of the most popular networks.
- Demonstrating power techniques for connecting networks using twisted pair cable (10/100-Base T network) and Wireless Technology media.
- Install and configure modems and software.
- Using modems for file transfer (send/receive).
- Connecting telephone line.
- Install and configure typical network and communication software for networking and data transfer.
- Setup and configure a "peer to peer" network also a "client/server" network.
- Setup and configure an Ethernet Network in star configuration using wired and wireless switches.
- Plan layout and configure a network for a specific application.
- Install and configure hardware.
- Install and configure network interface cards.
- Install cable and connectors using proper networking tools.
- Install and configure basic network security.



NETWORK AND CABLING TRAINER

Model Number : CLP-PCN-2

Educational Objectives:

- Identify media types and their uses :
 - a. Twisted Pair (UTP/STP) cable, Category 3, 5e and 6.
 - b. Coaxial cable, such as: RG-58.
- Identify connectors :
 - a. RJ-45 connector.
 - b. RJ-11 connector.
 - c. BNC connector.
- Dissect and identify construction of various type of cables.
- Identify operation of hand tools and cable tester.
- Pull cable through conduit, punch down cable to 110 block, test with cable tester.
- Prepare and test a UTP cable, category 5e with RJ45 connectors.
- Prepare and test a UTP cable, category 6 with RJ45 connectors.
- Prepare and test a UTP cable, category 3 with RJ45 connectors.
- Connect UTP cable to modular outlets and test the connection.
- Apply BNC connectors to coaxial cable and test.
- To demonstrate configuration of various topologies:
 - a. Bus topology
 - b. Star topology
 - c. Token Ring topology.



LAN SWITCH TRAINER

Model Number : CLP-HST-2

Educational Objectives :

- Familiarization of Connection PC to Local Area Network (LAN) by using LAN Switch.
- Familiarization LAN Switch component.
- Understand LAN Switch Power supply.
- Troubleshooting LAN Switch Isolation Interface.
- Troubleshooting of Transmitting System on LAN Switch Trainer.
- Troubleshooting of Receiving System on LAN Switch Trainer.
- Troubleshooting Switching Engine.



PRACTICAL LAN TRAINER

Model Number : CLP-PLT

Educational Objectives :

1. Understanding Local Area Network Technology

- Understanding the function of common LAN protocols.
- Identify commonly used TCP and UDP default ports for LAN.
- Identify address formats.
- Given a scenario, evaluate the proper use of the following addressing technologies and addressing schemes.
- Identify common IPv4 and IPv6 routing protocols.
- Compare the characteristics of wireless communication standards.

2. Understanding Network Media and Topologies

- Categorize standard cable types and their properties.
- Identify common tools and connector types.
- Given a scenario, differentiate and implement appropriate wiring standards.
- Categorize LAN technology types and properties.
- Explain common logical network topologies and their characteristics.
- Install components of wiring distribution factor which affect the range and speed of wireless service.
- Wireless technologies: Direct sequence spread spectrum, Bluetooth, Frequency hopping spread spectrum.

3. Understanding LAN Device

- Install, configure and differentiate between common network devices.
- Explain the advanced features of a switch.
- Implement a basic wireless network.

4. Understanding LAN Implementation and Management

- Explain the function of each layer of the OSI model.
- Implement client and server connectivity.
- Explain the main characteristics and purpose of extranets and intranets.
- Identify types of configuration management documentation.
- Given a scenario, evaluate the network based on configuration management documentation.

5. Understanding Network tools and Security for LAN

- Select the appropriate command line interface tool.
- Explain the purpose of network scanners.
- Given a scenario, utilize the appropriate hardware tools.
- Explain the function of hardware and software security devices.
- Explain common features of a firewall.
- Explain the methods of network access security.



PRACTICAL WAN TRAINER

Model Number : CLP-PWT

Educational Objectives :

A) Media & Topologies Learning

- logical or physical network topologies.
- WAN Network Components.
- OSI Architecture.
- Services: GHDSL.
- WAN Implementation: MPLS, IP Transit, VPN, VLAN.
- Networking Traffic Analyzer.
- Dynamic Routing.

B) Protocols & Standards Learning

- MAC (Media Access Control).
- Network protocols:
 - a. PpoE (Point to Point over ethernet).
 - b. L2TP (Layer 2 Tunneling Protocol).
 - c. TCP / IP (Transmission Control Protocol / Internet Protocol).
 - d. PPP (Point to Point Protocol).
 - e. SLIP (Serial Line Internet Protocol).
 - f. HDLC (High-Level Data Link Control) – with Optional Module.
 - g. VOIP (Voice Over Internet Protocol).
- IP Secure Addressing.
- The characteristics of the following internet access technologies.
- The function of the following remote access protocols and services.
- Security protocols and their purpose and function.
- The authentication protocols.

C) Wide Area Network Implementation

- Client and Server Connectivity over the WAN.
- The main characteristics of VPN (Virtual Private Networks).
- The main characteristics and purpose of extranets and intranets.
- The purpose and benefits of using traffic Monitoring Software.
- WAN connection and troubleshooting.



NETWORK SECURITY TRAINER

Model Number : CLP-NST-1

Educational Objectives :

A) Network Security

- Network Security Policy and Concept.
- Element of Computer Network.
- Security for the domain concept.
 - a. Integration.
 - b. Access Control.
- Network Security Protocol and application.
- Data Encryption, concepts, types, algorithm.
- Web Security Concept.
- Wireless LAN security.
- Components.
- VPN Configuration, Protocols.
- Risk Study and evaluation.
- Recognizing viruses, trojans, worms.
- Firewalls and methods of utilization (both software and hardware)
- WPA nad Wi-Fi secutiy.

B) Application and Standard

- Characteristics of Hacker attack and worm Method.
- Firewall method in the computer system stand alone and networking.
- Web Filter system in the computer networking.
- Intrusion and detection system.
- VPN configuration on Window or Linux Server.
- Security protocols and their purpose and function.
- The authentication protocols.



FBC NEW FIBER OPTIC COMMUNICATIONS

Model Number : CLP-FBC

A) Base Station & Fundamentals Module. (CLP-FBC-1)

- **Fiber Characteristics.**
- Optoelectronic in Fiber technology:
 - a. Receiver
 - b. Transmitter
- Fiber Media types: Single-mode (ST), Multi-mode (SC)
- Fiber Cable Transmission:
 - a. Attenuation and Loss.
- Understanding Digital and Analog signal transmission over Fiber Optics cable:
 - a. Data coder and decoder.
 - b. Multiplexing and De-multiplexing.
 - c. Modulation and Demodulation.
- Fundamentals of Fiber Optic Transmitters Design.
- Fundamentals of Fiber Optic Receiver Design.

B) Fiber Optics Installation and Repair. (CLP-FBC-2)

- Splices, Connectors and Terminations.
- Fiber Optic cable preparation:
 - a. Cutting.
 - b. Polishing.
- Connecting Fiber Optic cable.
- Attenuation in Fiber Optic cable.

C) Fiber Optics Applications (CLP-FBC-3)

- Serial Communication between Pcs over Fiber Optic media.
Model: CLP-FBC-3A.
To order with fault simulation: CLP-FBC-3AF.
- Analog Communication over Fiber Optic media.
Model: CLP-FBC-3B.
To order with fault simulation: CLP-FBC-3BF.
- PC Network data communication over Fiber Media Kit.
Model: CLP-FBC-3C.
Consists of:
 - a. Fiber Optic Network Card, 1 port (2 Pcs).
 - b. Fiber Optic Cable 6 m length (1 pair).
 - c. Fiber Optic Loop Back Cable (1 Pc).

The Kit is design for testing and using fiber optic network cards, cables and connectors in PC Network Configuration.



CPA - DATA ACQUISITION SYSTEM & CONTROL



SIGNAL CONDITIONING TRAINER FOR DATA ACQUISITION

Model Number : CPA-SCT-1

Educational Objectives:

- Study of Analog Signal Conditioning Module
- Study of Digital Signal Conditioning Module
- Study of Analog to Digital Converter
- Study of Digital to Analog Converter



SENSOR AND TRANSDUCER TRAINER

Model Number : CPA-STT

Educational Objectives:

- Specific application modules allow for experiments in such areas as temperature and humidity, light, proximity, strain, pressure, flow, etc.
- Study of electrical/electronic engineering, chemical engineering, process control, physics and mechanical engineering.
- Study of Temperature and Humidity.
- Study of Proximity Sensor.
- Study of Load Cells and Strain Gauge.
- Study of Pressure Measurement.
- Study of Photo Electric Sensors.
- Study of Level Sensor.
- Study of Position and Displacement.
- Study of Flow.
- Study of Sound Sensor.
- Study of Switches and Control.



DATA ACQUISITION AND CONTROL TRAINER

Model Number : CPA-DAQ

Educational Objectives:

- Study of sensors and transducers, signal conditioning, Visual basic programming, application development, system integration.
- Knowledge Basic signal conditioning is explored through a very visible system on modular application PCBs that are inserted into the base station.
- The signal may be acquired by either a Serial based data acquisition system through the RS-232 port or through an 8 or 16 channel Data Acquisition PC Card.
- The system explores both open loop and closed loop applications.



ELECTRONIC WASHING MACHINE TRAINER

Model Number : CPA-WMT

Educational Objectives:

- Training service technicians about maintenance, trouble shooting and repair of washing machines.
- This trainer can combines a number of electrical, electronic and mechanical systems into a complex process.
- Electronic technicians can demonstrate a typical process control system which includes Flow, Temperature, Level and Speed control.
- Fault system which includes the block system diagram, LED display and 12 electronic faults, for the control system, valves, pump, motor, sensors, etc.
- The student can control the process, actuators, solenoid valves, heater, pump motor, etc.

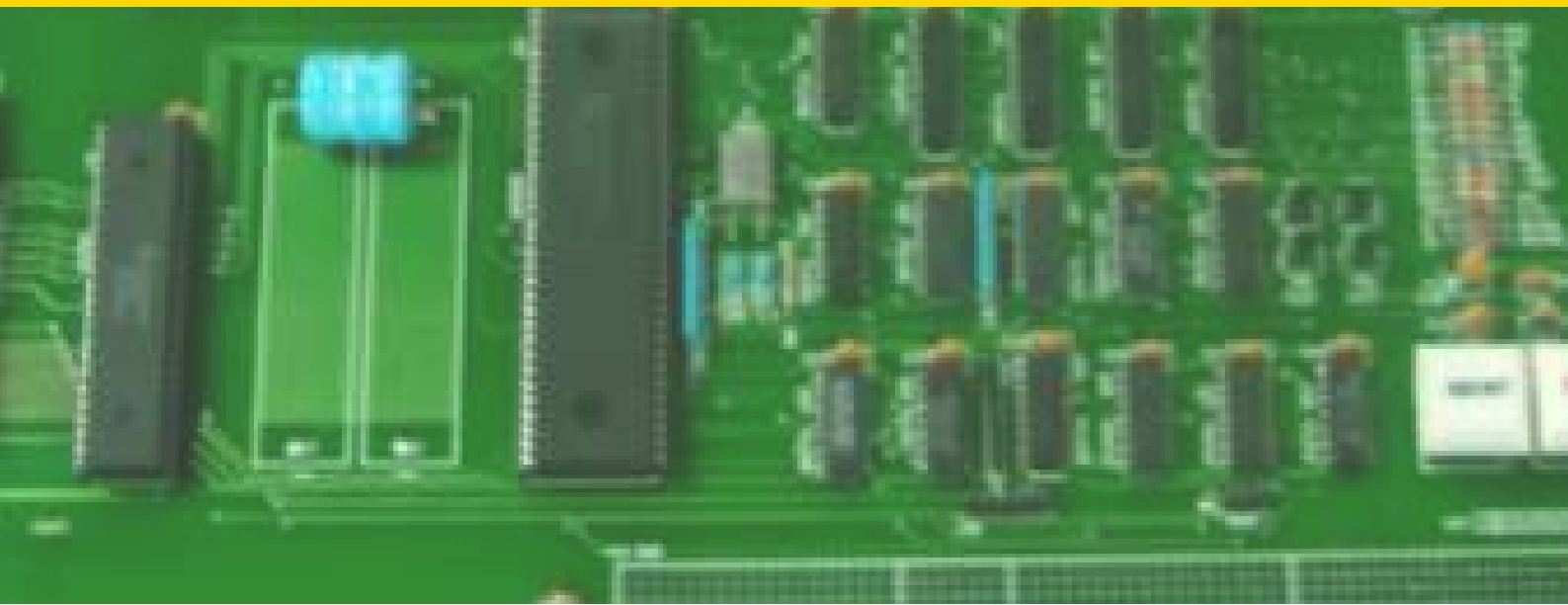
LAB TECH

CMM-5511

MICROPROCESSOR TRAINER



CMM – MICROCOMPUTER & MICROPROCESSOR

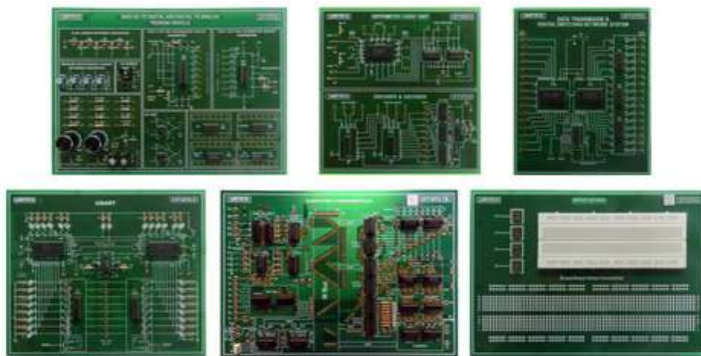


ADVANCE DIGITAL APPLICATION MODULES

Model Number : EFT-DTX

Educational Objectives:

- Each application circuit module is printed on a special design PCB that shows the circuit layout on top of the PCB (component side) and the circuit path is able to be observed from the bottom side of the PCB (solder side).
- Study of electronic instrument measurements in order to understand and to study the circuit electrical characteristics and behavior.
- Study of Arithmetic Logic Unit.
- Study of Encoder and Decoder Application.
- Study of Data Transmission and Digital Switching Network System.
- Study of Frequency to Voltage and Voltage to Frequency Converter.
- Study of Usart.
- Study of Analog to Digital Converter and Digital to Analog Converter.
- Study of Computer Fundamentals Training.
- Study of Breadboard.



8085 MICROPROCESSOR TRAINER

MODEL NUMBER : CMM 8085

Educational Objectives:

- CMM-8085 operates with SINGLE 5V power supply either from on board keyboard or from CRT terminal/host computer through RS-232- C interface.
- In both keyboard and serial modes, user can enter programs, run them at full speed and debug them through break point and single step facilities.
- The trainer allows program editing and relocation through INSERT, DELETE and BLOCK MOVE commands.
- The system allows direct read / write from / to a specified I/O port though IN BYTE and OUT BYTE commands.
- It has four onboard Spectra Strip type ribbon cable connectors for easy expansion and two user defined function keys.
- Onboard battery backup provision.
- It supports many types of interfaces On board Text Editor, Assembler and Dissembler facilities in serial mode.



8088 MICROPROCESSOR TRAINER

Model Number : CMM 8088

Educational Objectives:

- Works with either 8086 or 8088 CPU
- Operates with on-board keypad or with a PC compatible system through its RS 232 C interface.
- Provision for on-board 8087 (NDP).
- Powerful system monitor permits entry of programs, debugging through break point and instruction step facilities.
- Built-in one line assembler / disassembler. Centronics Printer Driver included in the monitor program.
- Provision for easy system expansion through system bus connectors.
- Provision for battery backup to RAM.
- Supported by a variety of interface modules including EPROM PROGRAMMER.

6811 MOTOROLA MICROPROCESSOR TRAINER

Model Number : CMM-6811

Educational Objectives:

- Socketed 52-pin 6811 Motorola microcontroller, system clock at 2 Mhz
- 32K battery-backed CMOS static RAM
- Digital input latch
- Digital output latch driving two L293 chips capable of driving 4 DC motors
- 14-pin LCD interface and a 16 X 2 character LCD screen
- Two user programmable push buttons, one knob, one piezo beeper
- Powered header inputs for 7 analog sensors and 9 digital sensors.
- Powered/polarized individual sensor connectors
- 38 kHz oscillator and drive transistor for IR output and on-board 38 KHz IR receiver.
- One servo motor output and serial peripheral interface
- Single 9.6 V nicad battery powers CPU and motors recharge, circuitry for the battery built into the board; battery fits into commercial enclosure sized to fit the HB.
- 7 of the 8 analog inputs broken out to sensor headers; eighth is wired to a user trimpot (can be used to scroll through messages on the LCD screen).
- On-board IR receiver interprets signals from house hold remotes or other robots
- Separate serial interface board uses off-the-shelf serial, and recharges the HB's battery whenever it's plugged in.



MOTOROLA 68000

Model Number : CMM-68000

Educational Objectives:

- 68000 CPU with 8 MHz Clock
- 16 Bit Microprocessor
- 68230 Parallel Interface/Timer :
 - 16 I/O Lines
 - 8 User Defined Lines
 - 24 Bit Counter/Timer
- 68681 DUAL UART :
 - 2 RS232 Ports via DB 9-way
 - 6 Output Lines
 - 4 Input Lines
- Operates on single +5v power supply with a PC compatible system through its RS 232 C serial communication interface.
- Powerful system monitor permits entry of programs, debugging through break point, trace and instruction step facilities.
- Hardware debugging through Read loop, Write loop and Test memory command.
- Centronics printer Driver included in the monitor program.
- Interfacing with PC compatibles, with file uploads / download capability.
- ABORT facility to recover gracefully from "STUCK" programs.
- Flexible and powerful interrupt system.
- Supported by a variety of interface modules
- Built-in On-line Assembler, Disassembler.
- Trainer has on board memory of 128K bytes of monitor firmware, 64K of RAM, expandable up to 256K bytes of optional ROM / RAM.
- On board serial printer interface.
- ABORT facility to recover gracefully from "STUCK" program.
- Flexible and Powerful Interrupt system.
- On board European standard G64 Bus interface.
- Provision for multi-master design expansion.
- Provision for Nickel cadmium battery for battery back-up of RAM.
- Student Manual with Programming Exercises
- Supported by variety of Interface Modules.



MICROCONTROLLER TRAINER

Model Number : CMM-8051

Educational Objectives:

- CMM-8051 can be operated either from on board keypad or from a CRT terminal/host computer through its RS-232-C interface.
- Keyboard and serial monitor programs support the entry of user programs, editing and debugging facilities like break points (128K), single stepping and full speed execution of user programs.
- Line Assembler & Disassembler in Serial Mode.
- File upload/download from host system using optional driver software.
- On board audio cassette interface to save and load programs using audio cassette recorder.
- Total on board memory is 128K bytes of which 88K bytes memory has optional battery backup facility.
- On board Centronics Parallel Printer Interface.
- 13 uncommitted port lines of 8031 brought out to the connector (including INTI, RXD & TXD pins).
- Buffered bus signals are available through ribbon cable connector to easy system expansion.
- Test point for system timing, oscillator, read, write, ALE and PSEN.



PAL/GAL PROGRAMMER TRAINER

Model Number : CMM-PLD

Educational Objectives:

- The Programmer is a universal device programmer, which works through the PC's parallel port.
- It features a 48-pin universal pin driver and an expandable TTL pin driver.
- It supports over 1200 different devices, including PAL, GAL, CPAL, EPLD, PEEL, MAX, MACH, PLSI, microprocessors, EPROM, series EPROM, PROM and Flash memory.
- Optional ROM emulator modules support devices up to 16-bits.

PROGRAMMER

Model Number : CMM-PIC-1

Educational Objectives:

- The CMM-PIC-1 is designed as a tool to allow Students and developers to program PIC Microcontroller's.
- The CMM-PIC-1 comes complete with the development programming board and Programming Software.
- The PIC programmer is used for downloading a specific program for controlling the experiment modules such as, temperature control, speed control and traffic light control.
- This CMM-PIC-1 uses USB/Serial port connection.
- The programming software for PC's, works under Windows NT/2000/XP/7.



ANALOG COMPUTING TRAINER

Model Number : CMM-ACT

Educational Objectives:

- Introduction to Analog Computing
- Operational Amplifier as Amplifier
- Operational Amplifier as Attenuator
- Operational Amplifier as Differentiator
- Operational Amplifier as Integrator
- Linear Equations
- 1st Order Differential Equations
- 2nd Order Differential Equation
- Positive and Negative Damping Effects
- 2nd Order System Frequency Response
- Simulation of physical system and transfer function

MOD ACC INTERFACE MICROPROCESSOR

Model Number : CMM-INT

Educational Objectives:

- Familiarization of Elevator Interface
- Familiarization of Traffic Lights Interface
- Familiarization of Stepper Motor Interface
- Familiarization of 4 Digit, 7 Segment LED Display Interface
- Familiarization of DAC For ADC and Temperature Sensor Interface
- Familiarization of Dual DAC Interface
- Familiarization of 8 Channel 12-BIT ADC Interface
- Familiarization of Keyboard Module
- Familiarization of 16 Channel 8-BIT ADC Interface
- Familiarization of Logic Controller Interface
- Familiarization of Music Tone Generator Interface
- Familiarization of Opto Isolated Input
- Familiarization of Relay Output
- Familiarization of Dual Slope ADC Interface





Labtech Training Systems are used in over 75 countries world wide and indicated in blue on this map.
We also have 6 regional operational locations marked with a flag .



Labtech Product Areas :

- Air Conditioning and Refrigeration Technology
- Automotive and Transportation Technology
- Biomedical Technology
- Computer & Networks Technology
- Digital TVET Content for Virtual Learning
- Electrical Technology
- Electronics Technology
- Learning Management Systems / Classroom21 CMS
- Renewable Energy and Green Tech
- TVET Learning Management System

Labtech has obtained major Quality Certifications from TÜV Rheinland, Germany:
ISO 9001:2015 Quality Management System



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