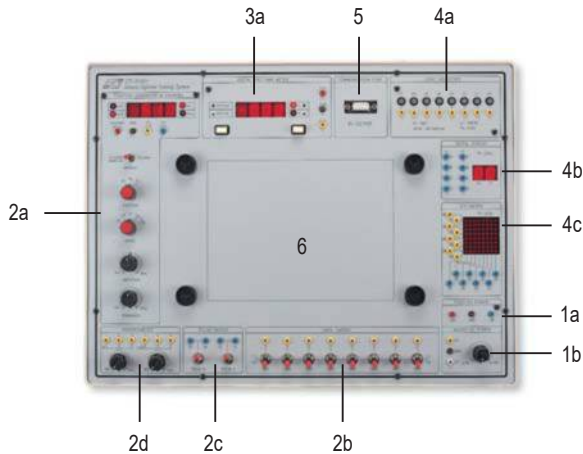
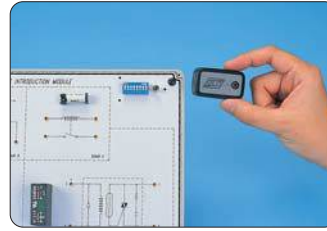




- Suitable for combinational logic, sequential logic experiments and designs
- Ideal tool for learning the basics of digital logic circuits
- Comprehensive power, signal supply and measurement devices for making experiments easily
- Expandability and flexibility of experiments with the combination of the universal breadboard
- All supply units are equipped with overload protection for better safety
- Computer interaction provided simulation software & emulation hardware



SPECIFICATION

1. Power supply units

- Fixed DC power supply
 - Voltage range: +5 V, -5 V
 - Maximum current output: 0.3 A
 - With overload protection
- Dual adjustable DC power supply
 - Voltage range : 3 V ~ 18 V, continuously adjustable
 - Maximum current output: 1 A
 - With overload protection

2. Signal generator units

- Function generator
 - Output waveform: sine, triangle, square, pulse
 - Output frequency: 1~100 KHz; 5 settings, continuously adjustable
 - Output impedance: 50 Ω
 - Output amplitude: \ddot{Y} 18 Vpp (open loop); \ddot{Y} 9 Vpp (with 50 Ω load)
 - Digital display: 4 sets of 7-segment LED display
 - With Hz, KHz, gate, OVFL LED
 - With frequency counter
 - Minimum input voltage: 300m Vpp
 - Counter range: DC ~ 100 KHz

b. Data switch

- 8 sets of independent output
- Output level: TTL
- Fanout: 10 TTL load

c. Pulse switch

- 2 sets of independent control output
- Each set with Q,Q output, pulse width \hat{w} 5 ms
- Output Level: TTL
- Each set of switch with debounce circuit
- Fanout: 10 TTL load

d. Potentiometer

- 1 K Ω , 0.25W, variable resistor with 3 terminals (1,2,3), with overload protection
- 100 K Ω , 0.25W, variable resistor with 3 terminals (1,2,3), with overload protection

3. Measurement units

- 3 1/2-digit digital Volt/Amp meter
 - DC voltage range: 2 V, 20 V
 - DC voltage accuracy: \ddot{U} (0.3% of reading +1 digit)
 - DC current range: 2 mA, 2 A
 - DC current accuracy: \ddot{U} (0.5% of reading +1 digit)

4. Indicator units

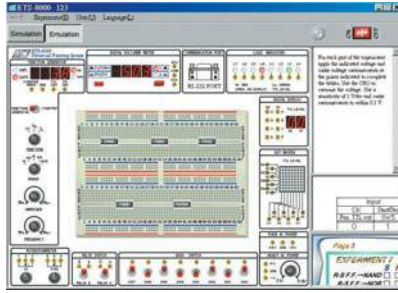
- Logic indicators
 - Logic level: TTL
 - Display: RED LED for logic high, GREEN LED for logic low; open status is none
 - 8 sets of independent input terminal
- Digital display
 - Logic level: TTL
 - 2 sets of independent 7-segment LED display
 - With BCD, 7-segment decode/driver input terminal
- 8x8 LED Dot matrix
 - Logic level: TTL
 - With row input terminal: R1~R8
 - With column input terminal: C1~C8

5. Computer interface units

System requirements:

Hardware: CPU PIII 300 MHz, RAM 128 MB, HDD 100 MB
free space, all better

Software: Windows 98/2000/XP

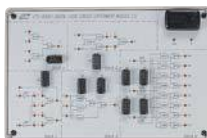


- a. Software simulation
 - Simulate all the active status of digital logic circuits on the platform of ETS-8000
 - With simulation software of breadboard
 - Simulate all digital experiments from user manual
 - Hint for experiment procedure
 - Automatically judging the line connection is true or false by computer
 - Recording experiment result
- b. Hardware emulation
 - Receive signal status of ETS-8000 platform through RS-232 port (Option: USB)
 - Display the entity-operation of ETS-8000 platform from screen
 - Display and hint for how to connect & proceed from screen
 - Automatically judging the experiment result by software
 - Recording experiment result

6. Experiment modules

- a. Each module is equipped with an 8-bit DIP switch for fault simulations. Students can practice trouble shooting by setting the DIP switch to different positions
- b. All terminals on the modules accept 2 mm plugs
- c. Comprehensive experiment manual
- d. Module dimension: 255 x 165 x 30 mm
- e. Individual storage case for each module

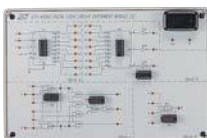
LIST OF MODULES



ETS-83001



ETS-83003



ETS-83002



ETS-83004

- ETS-83001 Basic logic/Assembled logic gates and application
- ETS-83002 Basic logic/Assembled logic gates and application; Decoder/Encoder experiments
- ETS-83003 Multiplexer Experiments; Adder/Subtractor experiments
- ETS-83004 Basic of Flip-Flop experiments; Counter; Digital

LIST OF EXPERIMENTS

- Used the ETS-8000 device
 - (a) Switch & LED
- Basic logic gates experiments
 - (a) OR gate (b) NOT gate (c) OR + NOT gate
 - (d) NOR gate (e) NAND gate (f) 4-inputs NAND gate
 - (g) AND-NOR (h) Staircase Lamp
- Assembled logic circuits experiments
 - (a) $X+0=X$, $X+1=1$ (b) $X\bar{C} 0=0$, $X\bar{C} 1=X$
 - (c) $X+X=X$, $X+X'=1$ (d) $X\bar{C} X=X$, $X\bar{C} X'=0$
 - (e) $(X\bar{C} Y)'=X'+Y'$ (f) $(X+Y)'=X'\bar{C} Y'$
 - (g) 2-bits comparator (h) Voting circuit
 - (i) Karnagh map application
- Adder/Subtractor experiments
 - (a) Half adder (b) Full adder (c) Half subtractor
 - (d) Full subtractor (e) 4-bits adder
 - (f) 4-bits subtractor (g) BCD code adder
- Decoder/Encoder experiments
 - (a) 8 to 3 encoder (b) 3 to 8 decoder
- Multiplexer experiments
 - (a) Multiplexer
- Basic of Flip-Flop experiments
 - (a) Constructing a R-S Flip-Flop with NAND gates
 - (b) Constructing a R-S Flip-Flop with NOR gates
 - (c) J-K Flip-Flop (d) T Flip-Flop (e) D Flip-Flop
- Application of Flip-Flop experiments
 - (a) Constructing a D Flip-Flop with a J-K Flip-Flop;
 - (b) Constructing a T Flip-Flop with a J-K Flip-Flop;
 - (c) Mod-8 of ripple counter
- Counter experiments
 - (a) Mod-8 counter (b) Mod-4 arbitrarily sequence
- Application of digital logic
 - (a) 0~9 Electric roulette (b) Traffic sign control

ACCESSORIES

1. AC cord
2. Anti-Dust cover
3. Experiment manual
4. Connect plugs: $\phi 2$ mm, 10 mmL
5. Connector leads: 1 set
6. CD: Software for data acquisition
7. RS-232 cable

OTHERS

1. Power source: AC 110 V/220 V \cup 10%, 50/60 Hz
2. Operating temperature: 0 ~ 50°C
3. Relative humidity: RH <90%
4. Dimension: 400 x 300 x 130 mm
5. Weight: approx. 5.5 Kg

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