

***$\mu$ P-1 Universal Testing  
Board***

**User's Manual**



***LEAP ELECTRONIC CO., LTD.***

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## I. Brief Outline

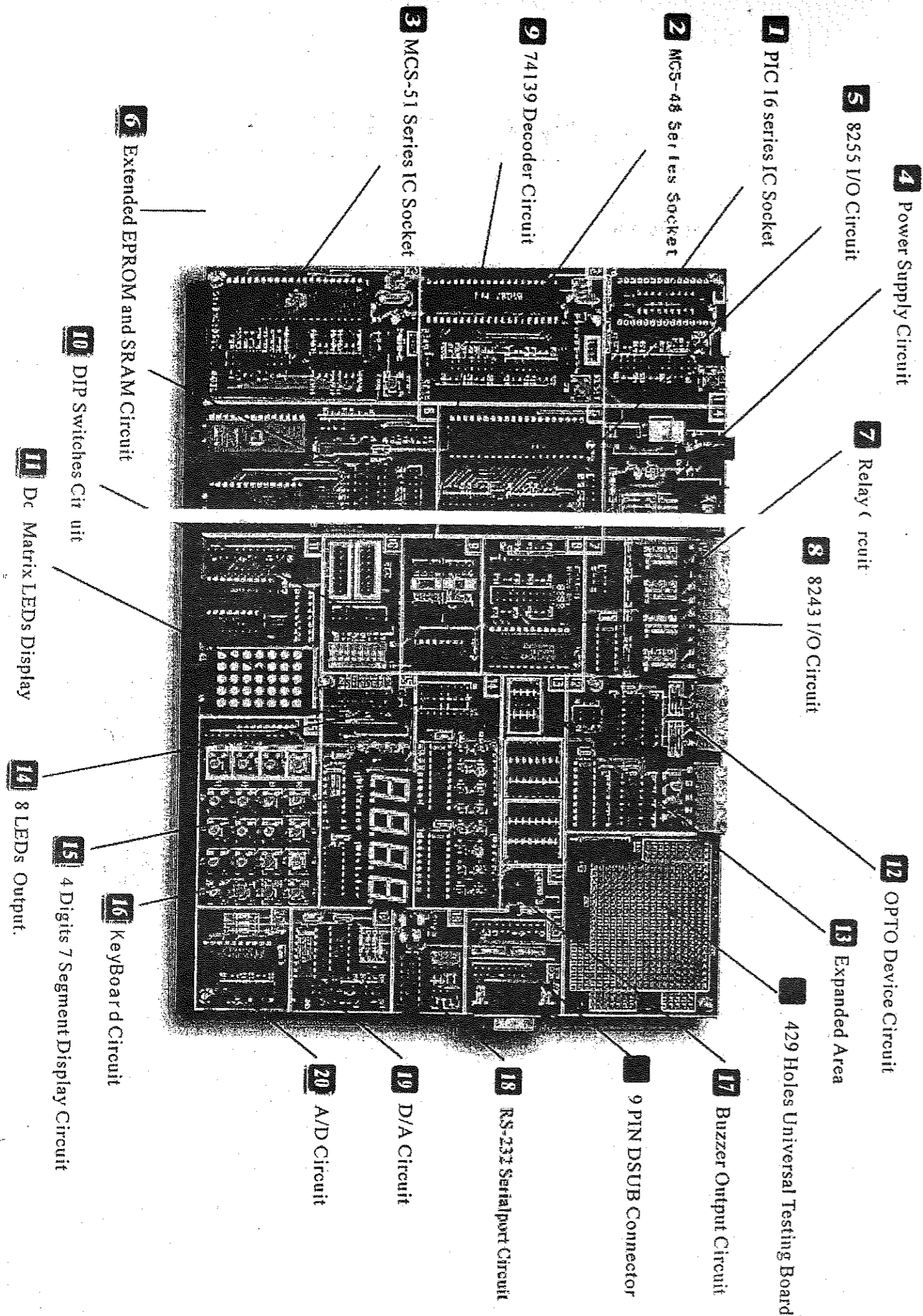
In the process of learning single crystal; by and large, people lacked of attention with practical training's testing board besides PE2 · EDITOR and EMULATOR. We only can follow the Testing Board do experimentation and can not develop new electric circuit from the market. This is because they are usually own fixed electric circuit, even can not to change teaching materials.

The other one no Testing Board, A beginner spend much time either inserting components on the bread board or soldering Electric circuit on Universal Testing Board ;furthermore, instruction practice will decrease learning interesting. Leap Electronics Co., Ltd. in the view of this situation develop opening up style of Composing Electric Circuit single crystal with MCS48/51/PIC The feature as stated shown:

- 1 · Experiment with a series of single crystal of MCS48/51/PIC
- 2 · To match any brand of Emulator
- 3 · System was signed with CPU independence, interface apart
- 4 · Provided more than 20 kinds of Electric Circuits
- 5 · All of the electronics circuits were combined with cable wires by user. It is very convenient
- 6 · Do not need solder
- 7 · The testing board within 429 holes. It also can be used expand or experiment project
- 8 · Power provided two kinds of input with 9V 500mA and DC 5V adapter.
- 9 · To match up any single crystal teaching books

## II. uP-1 Direction of Using Directly with universal Testing Board

- 1 · Simply LED and Function Key Experiment
- 2 · Single Set or Double Set's Traffic Light Control
- 3 · Horseback lights or Neon lights
- 4 · Using Program Memory Expanded
- 5 · Using Data Memory Expanded
- 6 · Using 8243 I/O Expanded IC
- 7 · Seven Node Code Monitor (Single Set: Using Decoder)
- 8 · Seven Node Code Monitor (Single Set: Using Oscillograph)
- 9 · Seven Segment Display Circuit (Four-Digits)
- 10 · Electronics a Relay Control for Electronic
- 11 · 4x4 Development Keyboard Scan
- 12 · Toggle Switch Read-in and Set
- 13 · A Clock
- 14 · A Combination Lock
- 15 · An Electronic Piano
- 16 · A Counter



- 17 · A String Line of Interface Practical Training
- 18 · OPTO Device Practical Training of input and output
- 19 · Practical Training Transforms Analog into Digital
- 20 · 8255 I/O Practical Training Expanded IC
- 21 · LCD Electrics Circuits Practical Training(LCD is Order Unit)
- 22 · RS-23 On-line Experiment
- 23 · Multiple I/O Decoding Practical Training
- 24 · 5x7 Dot- Matrix Monitor Experiment

### III. uP-1 Direction of Electrics Circuit

- 1 · PIC 16 Series IC Socket
- 2 · 8748/8749 Series IC Socket
- 3 · 8751/8752 Series IC Socket
- 4 · System Power Supplied
- 5 · 8255 I/O Electrics Circuit
- 6 · Expand EPROM and SRAM Electrics Circuit
- 7 · RELAY Electrics Circuit
- 8 · 8243 I/O Electrics Circuit
- 9 · 74139 Decoder IC Electrics Circuit
- 10 · DIP SW Electrics Circuit · +5V 及 Ground
- 11 · Dot- Matrix Showed Electrics Circuit
- 12 · OPTO Device Circuit
- 13 · Expand Area
- 14 · Eight LED Lights Output (Two Units Electronics Circuit)
- 15 · Seven Segment Display Circuit (Four-Digits)
- 16 · Key Switch Electrics Circuit
- 17 · Buzzer Electrics Circuit
- 18 · RS-232 Serial Port Electrics Circuit
- 19 · D/A Electrics Circuit
- 20 · A/D Electrics Circuit
- 21 · LCD Connector
- 22 · 9 PIN DSUB Connector
- 23 · 429 Hole's Universal Testing Board

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### IV. uP-1 Direction of Universal Testing Board

The Universal Testing Board including 20 electrics circuit units. User can easy finish either various circuits matched or utilizing Universal Testing Board within 429 holes in order to join other electrics circuit obtained the requirement of experiment

It provided besides common use MCS-48 and MCS-51 for user, it also involved currently series 4 bit MPU-PIC16XX series, Z8 series, MOTOROLA'S series MPU series in order to studying every different Single Crystal purpose of control

For general experiment, it can normal work with 9V 500mA Adapter · Experiment contents involved besides DIP SW · LED Output · RELAY Output · Light Coupling Input/ Output and Single Button Input, it also including 4 Digits 7 Segment Display Circuit · Buzzer · 4x4 Matrix Keyboard and R8232 interface within the testing board

Furthermore · The expanded component also within the testing board used MCS-48 and MCS-51 · for example 8243 · 8255 · DAC0800 and ADC0804

### V. uP-1 Direction of PC Board

To introduce with arrangement under numbers of the testing board

[1]PIC16 series IC socket

was placed position by PIC16C54 · 16C55 · PIC16C56 · 16C57 series MPU experiment.

Electrics circuits enclosed Reset Key in order to convenient operation for user

[2]8748/49 series IC socket

was placed position by 8748/49 series MPU experiment. Electrics circuit enclosed "Reset Key", and short Pin directly to choose 8039 · 8748 or 8749.

[3]8751/52 series IC socket

was placed position by 8751/52 series MPU experiment. Electrics circuit enclosed Reset Key · and short Pin directly to choose 8031 · 8751 or 8951

[4]System Power Supply:

A · S19 stir downward: Using regulated power supply IC-7805 meanwhile transfer input DC9V into uP-1 +5V power

B · S19 stir upward: Using standard +5V power for supply power

[5]8255 I/O Electrics Circuit

was placed position by 8255 IC

[6] Program Expand EPROM and SRAM Electrics Circuit

Regarding need to use external EPROM or use root position 8031,8032....This Position provided an easier way to expand, also use EPROM 2764..27512, and SRAM6264

[7]RELAY Electrics Circuits

Regarding need to separate from system power or signal can not drive output component,

we can use the Electrics Circuits to drive, for example Ac110 v loads and the electrics circuits provide N.C. point

[8]8243 I/O Electrics Circuit

was expanded placed position by IC-8243 with MCS48, MCS51 series MPU experiment

[9]74139 Decode IC Electrics Circuit

was though maximum use of IC crystal experiment at the same time, was placed position with decoding

[10]DIP SW Electrics Circuit +5V and Ground

The Electrics Circuit was used basic or to be a parameter with Hi/Lo, at the left side provided +5V and GND separately

[11]Dot-matrix Showed Electrics Circuit

Supply 5x7 dot-matrix monitor for user use

[12]OPTO Device Circuit

The Electrics Circuits including four sets of input and output. Both of them used PC817 separate components, the signal of input top reach DC30V, output used 0.5 Ampere load

[13] Expand Area

We can utilize this area expanded contact drop when contact drop shortage

[14] Eight LED Lights Output (Two Units Electronics Circuit)

16 LED lights shown output

[15] Seven Segment Display Circuit (Four – Digits)

Using 7447 or GAL16V8 to be output device directly which output chose by two amount BIT. Input showed either short pin normal D0 ... D3 style or program done with seven node code decode

[16] Key Switch Electrics Circuit

This unit involved two parts, one is matrix keyboard used development scan, the other is static four button input used test input

[17] Buzzer Electrics Circuit

Using transistor to be a driver through MPU I/O pin input directly

[18] RS-232 Serial Port Electrics Circuit

The electrics circuits provided 2 pins to link transfer interface RS232 from input and output separately.

[19] D/A Electrics Circuit

D/A Electrics Circuit was composed of DAC0800 + LM324. These two IC 's power provided from external world: V+, V- and GND. DAC0800 reference voltage was decided by VH and VR. Output is "OUT" Pin

[20]A/D Electrics Circuit

Using ADC080, reference voltage is Vcc divide 2, input pin is V1. The scope is from 0V

to +5V

[Not Included Assignment Number's Unit]

1 · LCD Connect

Providing two different kinds of style with LCD Pin, make choice by user

2 · 9 PIN D Connector - Original Connect

The main function is matching up[18]RS232, also can map out another functions

3 · 429 Hole's Universal Board

Soldering electrics circuit area by user.

**VI. uP-1 Direction of Experiment Unit with Universal Testing Board**

1 · Simply LED and Function Key Experiment

2 · Single Set or Double Set's Traffic Light Control

3 · Horseback lights or Neon lights

4 · Using Program Memory Expanded

5 · Using Data Memory Expanded

6 · Using 8243 I/O Expands IC

7 · Seven Node Code Monitor (Single Set: Using Decoder)

8 · Seven Node Code Monitor (Single Set: Using Oscillograph)

9 · 4 Digits 7 Segment Display Circuit (Four Sets)

10 · Electronics a Relay Control for Electronics

11 · 4x4 Keyboard Scan

12 · Toggle Switch Read-in and Set

13 · Clock

14 · A Combination Lock

15 · An Electronic Piano

16 · A Counter

17 · A String Line of Interface Practical Training

18 · Light Coincidence Practical Training of input and output

19 · Practical Training Transforms Analog into Digital

20 · 8255 I/O Practical Training Expanded IC

21 · LCD Electrics Circuits Practical Training (LCD is Order Unit)

22 · PC on-line with Up-1 (Using RS232)

23 · Multiple IC Decoding Practical Training

24 · 5X7 Dot- Matrix Monitor Experiment

As stated above, more discuss on the book in the market. The experiment board known single crystal application thoroughly with different ways by different users and can do more electrics circuit experiment.

### VII . uP-1 Direction of Systemic Equipment with Universal Testing Board

- |                           |                  |
|---------------------------|------------------|
| 1 · Main Board            | *One             |
| 2 · 8 Pin Wire            | *Four            |
| 3 · 4Pin Wire             | *Four            |
| 4 · 2Pin Wire             | *Eight           |
| 5 · User's Manual         | *One             |
| 6 · 16 Words X2 Lines LCD | Order Production |
| 7 · DC9V 500mA AD Adaptor | Order Production |

