

## 500-IN-ONE Electronic Projects Lab – Experiments List

The **500-IN-ONE ELECTRONIC PROJECT LAB** teaches how to identify different electrical parts, how to read a schematic, how to make 500 projects without any soldering or tools, and how all 500 projects work (there are 100 projects teach the basic of programming). This complete electronics course covers the following subjects areas:

1.	Surprise and Fun	6 Experiments
2.	Back to the Basics	17 Experiments
3.	Electronic " Building Blocks "	14 Experiments
4.	Putting Electronics to Work	24 Experiments
5.	Radio Circuit	5 Experiments
6.	Sonic Zoo and Sound Factory	16 Experiments
7.	Electronic Decision-Makers	13 Experiments
8.	Operational Amplifier IC Can Do Many Things	26 Experiments
9.	Introducing The Power Amplifier IC	4 Experiments
10.	A Trip to Digital Land	25 Experiments
11.	More Adventures in Digital Land	30 Experiments
12.	Circuits that Counts	26 Experiments
13.	Amusement in Digital Land	19 Experiments
14.	Surprise and Fun Revisited	20 Experiments
15.	Testing and Measuring Circuits	9 Experiments
16.	Learn Basics More	22 Experiments
17.	Amusement on Sound	14 Experiments
18.	More Radio Circuits	3 Experiments
19.	To The Game World	12 Experiments
20.	More Adventure in OP Amplifier Circuits	11 Experiments
21.	More About Oscillator	14 Experiments
22.	Shake-hands of Analog and Digital	9 Experiments
23.	Getting Closer to Computer	7 Experiments
24.	More Digital Circuits	14 Experiments
25.	Amusement in Electronic Circuits	26 Experiments
26.	Testing and Measuring Circuits	14 Experiments
27.	Software Projects	100 Experiments

The ultimate **500-IN-ONE Electronic Project Lab** contains the following experiments in ADDITION to those listed for our 300-IN-ONE Electronic Project Lab.

### Back to the Basics

Capacitors in Series and Parallel

### Electronic "Building Blocks"

Low Distortion Sinewave Oscillator

### Putting Electronics to Work

Strobe Light  
Electronic Grandfather Clock  
Electronic Metronome  
Twin-T Audio Oscillator  
Current Switch  
Shot in the Dark  
Variable R-C Oscillator  
Two-Tone Buzzer  
Sawtooth Wave Oscillator

### Radio Circuits

Wireless Code Transmitter

Characteristic

Darlington Circuit (Touch Sensor)

Edge-Trigger Circuit

RC Type Differentiating

Circuit

Switch Matrix Circuit

Memory Backup Circuit

Power on Reset Circuit

Constant-Voltage Circuit

(Fixed Output)

Constant-Voltage Circuit

(Variable Output)

A Rectifier Circuit by Diode

Bridge

AGC Circuit Using a Single

Transistor

Upper/Lower Limiter Circuit

Using OP Amplifier

Window Comparator II

**Amusement on Sound**

Multi-Tone Siren

Digital Rhythm

Using J-K Flip-Flop

One-Shot Multivibrator

Using OP Amplifier

Shakehands of Analogue

and Digital

Pulse Number Modulation

Light Dimmer

Pulse Width Modulation

Light Dimmer

DC-DC Converter Using the

C-MOS Oscillator

Photometer with Digital

Display

Pulse Width Modulation

Light Dimmer II

Voltmeter

**Getting Closer**

**to Computers**

Full Adder

Decimal to Binary Encoder

Binary to BCD

Octal to BCD

Hexadecimal to BCD

Tachometer

Battery Checker II

Digital Illuminometer

### Software Projects

Light LEDs

Light On/Off LEDs

A Binary Counter-Increment

Value by ADD Instruction

A Binary

Counter-Decrement Value

by SUB Instruction

Light LEDs Sequentially

with AND Instruction

Light LEDs Sequentially

with OR Instruction

Turn On and Off LEDs

Sequentially with XOR

Instruction

Moving LEDs Light with

ROL Instruction

Moving LEDs Light with

ROR Instruction

Night Rider's LEDs with

Logical OR/NOR Gate for

Driving External Circuit

Logical XOR/XNOR Gate

for Driving External Circuit

Find a Leading Edge of

Input Pulse

Finding a Trailing Edge of

Input Pulse

Finding a Leading and

Trailing Edge of Input Pulse

A Pulse Stretcher

Starting a Delayed Pulse

Pulse Stretcher By Counting

a Clock

Counting External Pulse To

Advance Decimal Counter

Displays Number 0 To 9 on

7-Segment LED (1)

Change Order of Numbers

Display on 7-Segment (2)

Counts an External Clock

(1)

Counts an External Clock

(2)

## Sonic Zoo and Sound Factory

Two-Tone Patrol Car Siren  
Pencil Lead Organ  
Electronic Motorcycle  
Machine Gun Pulse  
Detector  
Electronic Siren  
Electronic Cat  
Electronic Organ

## Electronic Decision-Makers

Majority Logic Gate  
Electronic Coin Toss  
Electronic Coin Toss II  
Electronic Coin Toss III  
Even or Odd  
Quick Draw Game  
Close-In  
ESP Tester  
The Light Fantastic  
Shooting Game  
Marching LEDs  
Electronic Dice  
Electronic Roulette

## Operational Amplifier IC Can Do Many Things

Integrating Circuit  
Pitch Doubling Circuit  
Pitch Doubling Circuit II  
Comparator  
Schmitt Trigger Circuit  
Delayed Timer  
Pulse Frequency Doubler  
Touch Switch Using OP Amplifier

## Surprise and Fun Revisited

Experiment of Electromagnetic Induction  
Winking LEDs  
Voice Level Meter  
Buzzin' LED  
Son of Buzzin' LED

## Testing and Measuring Circuits

Audio Signal Tracer  
Metal Detector  
Rain Detector  
Burglar Alarm  
Temperature-Sensitive  
Audio Amplifier

## Learn Basics More

A Basic of Control Volume  
Emitter Follower  
Basic Operation of Zener Diode  
Zener Voltage Checker  
Zener Voltage Checker II  
Basic Photo-Transistor Operation  
Voltage Drop Circuit by Means of Diodes  
Experimentation of Capacitor Temperature

Two-IC Electronic Organ  
A Water Service Pipe Sound  
Electronic Klaxon  
Sound Machine III  
Sound Wave Varying with Light Intensity  
Player Organ  
Sound of Passing Siren  
Light Source Sensing Circuit by Sound  
Electronic Piano Circuit  
Whistle Generating Circuit  
Space Gun  
Car Horn

## More Radio Circuits

Morse Code Transmitter  
Broadcasting Organ  
FM Transmitter (FM  
Wireless Microphone

## To The Game World

Quiz Winner Detector  
Reflex Nerve Test Game  
Shooting Game II  
Shot In The Dark II  
Sound Quiz  
Stop the Seven  
High-Power Switch  
"Lockout, Mr. Blackbeard!" Game  
Russian Roulette  
Mole Hitting Game  
"Janken" Game  
Ping-Pong Game

## More Adventures in OP

Amplifier Circuits  
Voltage Controlled Amplifier  
V-F Converter  
F-V Converter  
F-V Converter II  
White Noise Generator  
Sweep Generator  
Multiple-Function IC Project  
Sound Alarm  
A Sound of Ripples  
Photo Organ  
Vibrato Organ

## More About Oscillation

Phase Shift Oscillator  
Wide Range Audio  
Frequency Oscillator  
Sawtooth Wave Oscillator II  
Three Phase Oscillator  
Wien-Bridge Oscillator  
Ramp Wave Generator  
Digital Sine Wave Generator  
Frequency-Variable Sine Wave Generator  
Sine Wave Oscillator Using D-A Converter  
RC Phase-Shift Oscillator  
Two Sine Waves with Different Phases  
One-Shot Multivibrator  
Using IC 555  
One-Shot Multivibrator

3-Bit Shift Register  
BCD-To-Decimal Decoder  
More Digital Circuits  
4-Input Data Selector  
AND/OR Circuit Using OP Amplifier  
XOR Using OP Amplifier  
Time Sharing Display of LEDs  
LED Lighting-Duty Varying Circuit Using One-Shot Multivibrator  
LED Blinking-Cycle Varying Circuit Using Astable Multivibrator  
LCD Static Drive Circuit  
LCD Dynamic Drive Circuit  
Testing LCD Display Response  
LED Drive by 4 Switches  
Flashing LED by Preset Number  
Digital Timer (1 to 7 Minutes)  
Sound Timer  
Programmable Timer with Down Counter

## Amusement in Electronic Circuits

Revolving Light  
Photo Switch  
Door Chime  
Visitor Sensing Chime  
Using Photo-Transistor  
Touch VCO  
Sound Tuning Circuit  
Crossing-Bell Sound Generator  
Turn Indicator  
Staircase Light Switching  
Control Circuit  
Pseudo Candle Circuit  
Lie Detector  
Light Sensing Circuit  
Automatic Lighting LED  
Sound Sensing LED  
Illumination Lamp  
Intercom  
PIP Sound Interphone  
Electronic Volume  
Pedestrian Signal  
Time Counter  
Led Display Counting  
Up/Down Circuit  
An Electronic Pendulum  
Staircase Light Switching  
Control Circuit II  
Lamp Brightness Control Circuit  
Illumination Circuit with 4-LEDs  
A Simulated Car Winkers

## Testing and Measuring Circuits

Battery Checker  
Conductivity Tester  
Transistor Checker  
Three-Step Water Level Indicator

ROL/ROR Instructions (1)  
Night Rider's LEDs with ROL/ROR Instructions (2)  
Binary Counter with INC Instruction  
Binary Counter with DEC Instruction  
Sound Do as Do, Re, Mi  
Sound a Series of Musical Scale  
Let's Input Data to Program  
Hidden Key Triggers Sound and Turns All LEDs On  
Stacked MOV Instructions  
Changing Order of LEDs by Switch  
A Musical Scale Sound by S1 Key  
Arithmetic Addition of Two Binary Values  
Arithmetic Subtraction of Two Binary Values  
Arithmetic Multiplication of Two Binary Values  
Arithmetic Division of Two Binary Values  
Displays Number 0 to 9 on 7-Segment LED (2)  
Change Order of Numbers  
Display on 7-Segment LED (2)  
Switches S1-S4 Light Hex Number On 7-Seg LED  
8-Key Organ  
Lighting Spade, Diamond, Heart, and Club on the LCDs Display (Basic)  
Lighting Spade/Heart and Diamond/Club on the LCDs Display  
Lighting Spade, Diamond, Heart, and Club by Static Drive Circuit  
Lighting Spade, Diamond, Heart, and Club by 1/2 Duty-1/2 Bias Circuit  
Lighting Spade/Diamond and Heart/Club by 1/2 Duty-1/2 Bias Circuit  
Lighting Spade/Diamond and Heart/Club Alternately by 1/2 Duty-1/2 Bias Circuit  
Lighting Spade, Diamond, Heart, and Club by 1/2 Duty-1/2 Bias Circuit  
Results of Logical Operations AND, NAND, OR, and NOR  
Results of Logical Operations XOR and XNOR  
Results of Logical Operations AND/NAND with 4-Switch Entry  
Results of Logical Operations with OR/NOR  
4-Switch Entry  
Results of Logical Operations with XOR/XNOR  
4-Switch Entry  
Logical AND/NAND Gate for Driving External Circuit

Counts an External Clock (3)  
Counts an External Clock (4)  
Counts an External Clock (5)  
Counts an External Clock (6)  
3-Minute Timer  
Multi-Function Timer (1)  
15-Minute Timer with 7-Segment Display  
Multi-Function Timer (2)  
Digital Organ with PHOTO-TRANSISTOR (1)  
Digital Organ with PHOTO-TRANSISTOR (2)  
Digital Volume Changer (1)  
Digital Volume Changer (2)  
Digital Volume Changer (3)  
Digital Volume Changer (4)  
Digital Volume Changer (5)  
Illumination Controlled by PHOTO-TRANSISTOR (1)  
Illumination Controlled by PHOTO-TRANSISTOR (2)  
Illumination Controlled by Oscillator and PHOTO-TRANSISTOR (1)  
Illumination Controlled by Oscillator and PHOTO-TRANSISTOR (2)  
Illumination with Speed Control (1)  
Illumination with Speed Control (2)  
Sawtooth Waveform Generator  
Triangular Pulse Generator  
Digital Level Indicator  
Digital Lux Meter (Display In Binary)  
4-Bit A/D Converter (Display In Binary)  
4-Bit A/D Converter (Display In Hexadecimal On 7-Segment LED)  
Digital Lux Meter (Display In Hexadecimal)  
Audio Level Meter  
Audio Level Meter with Peak-Holding Capability  
Lighting Sign Board  
Digital Dice  
Digital Roulette  
Digital Slot Machine  
Up/Down Counter  
Digital Metronome  
Frequency Counter  
Dynamic Lighting of 7-Segment LED  
Lighting LED with Pulse Width Modulation  
Majority Logic Gate (2)  
Lighting LCD Segments by Static Drive  
Digital Buzzer  
Rhythm Box (1)  
Rhythm Box (2)  
Rhythm Box (3)  
Rhythm Box (3)



Quasar Electronics Limited

PO Box 6935, Bishops Stortford, CM23 4WP, United Kingdom

Tel: +44 (0)1279 467799 Fax: +44 (0)1279 267799

URL: <http://www.quasarelectronics.com>

E-mail: [sales@quasarelectronics.com](mailto:sales@quasarelectronics.com)