>>Light Emitting Diode

Platform for LED basic test and LED application test HBE-Green-LED



- Integrated Test Platform for 12 types LEDs and its applications
- Makes Up Education Themes for applications of LED principle, LED light and Display
- Provides LED light Control Algorithm and Control Program
- Power Control Test for LED operation
- Includes Oscilloscope to analyze the control signal and waveforms
- Provides Specific Program for functional Signal
 Processing and Application Test

Introduction

- Recently Interest in LED technology has been increased in Light and Display areas as New Technology Trend. And this technology is environment friendly so this has been recognized as a leader of Green Growth. As integrated Memory Semi-conductor and Electronic Communication have been developed for last 20 years, integrated LED and Electronic Communication will be developed as new Technology.
- LED lighting Technology using LED element has lower Power consumption and longer life than existing one so this substitutes the present Lighting market. LED Sign Board technology has more dynamic Display effect than existing Advertizing Display and this makes a huge market.
- HBE-Green-LED is Platform to experience LED new technology and test LED application in vocational training of secondary education (specialized course). With various LED configurations. and the specific program, it is possible to educate various LED technologies from basic test to application test.
- HBE-Green-LED is integral Test Equipment for all engineering fields of Electronic, Information Communication, Electric, Mechanics and etc. which should educate Green Energy technology as the core of Green Growth in the future.

Features

- It is possible to compare and analyze various elements and application parts for LED in one product and also to control each function without any Software and Program to control LED.
- Creating functional control signals and changing operation data differently through connecting with test PC, LED operation test is available.
- 2ch Oscilloscope is embedded for Power and Control Signal analysis and also Breadboard is embedded for LED characteristic test and Part error verification.
- separate program port is provided for changing program codes of embedded Microcontroller in order to control advanced functions.
- Basic sample and PC application contents are provided for various basic tests and application tests.



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Configuration and Names



- 1. Breadboard (12Line*35Column)
- 2. Ø5 LED (Red, Green, Blue, White), controls Current
- 3. ØLED (Red, Green, Blue), Voltage Control Circuit
- 4. Chip LED (Red, Green, Blue), Constant Current Control Circuit
- 5. 1Digit FND, PWM Brightness Control Circuit
- 6. Array FND, Controls Dynamic Scan and PWM Brightness
- 7.8 * 8 Dot Matrix LED, Dynamic Scan Control Circuit
- 8. Ir LED, Infrared Wireless Communication Circuit
- 9. 128 *128 262k Color OLED
- 10. Automatic Light Control, Automatic Brightness Control Circuit using Sensor

- 11. 2*16 Text LCD, LED Backlight, Controls Contrast and Brightness
- 12. 16 *16 Full Color LED Sign Board, LED Sign Board Control Circuit
- 13. LED Color Control, Display Colors with Red, Green, Blue LED Control
- 14. Power Conversion Circuit, AC to DC Power Conversion Circuit
- 15. Controls LED Light Brightness, Controls Brightness and Measures Power Efficiency with PWM
- 16. Displays Current and Power Analysis for LED light
- 17. Oscilloscope, embedded for LED Power and Control Signal Analysis

Block Diagram



Light Emitting Diode

HBE-LED-Lighting

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Hardware Specification

Item		Description		
Display LED	Chip LED	Size : 1608, 2012, 3216, 3528, Color : Red, Green, Blue	Realizes Constant Voltage, Control Circuit, Controls Brightness	
	DIP LED	Size: Ø5, Ø8, Color : Red, Green, Blue, White	Realizes PWM control Realizes Dynamic Scan control Controls Brightness	
	FND	1 Digit 7-Segment, Red, 4 Digit Array 7-Segment, Green	Realizes PWM control Realizes Dynamic Scan control Controls Brightness	
	Dot Matrix LED	8 Column*8 Line Dot Matrix, Red	Realizes PWM control Realizes Dynamic Scan Control Controls Brightness	
Communication LED	lr LED	Transmit 1EA, Receive 1EA	Realizes Wireless Infrared Communication Transmits/Receives Data	
LED Backlight	Text LCD	2 * 16 Text LCD, White LED Back Light used	Realizes Contrast Control of Character Display	
OLED	OLED	128 * 128 262K Color OLED	Displays Color Figure and Image	
Lamp	LED Lamp	3W, White LED Lamp 2EA	Realizes Manual and Automatic Brightness Control	
Sign Board	LED Sign Board	16 * 16 Full Color LED Sign Board Module	Realizes LED Sign Board Control	
Display	Text LCD	Monitoring Current and Power	Displays Figure and Image	
Sensor	CdS	Ø12 CdS Sensor	LED light Automatic	
	Motion	Sensing Human Body	Control with Sensor	
Scope	Oscilloscope	±15, 100K SPS, 2Ch	Analyzes Power and Voltage Control Signal	
MCU	ATmega128	Max 16MHz, 5EA	Realizes Light Controller Design	
Board	Breadboard	12 Line * 35 Column, Power Protection Circuit Embedded	Tests LED element Characteristic Tests LED element Error Check	
Interface	USB	Serial to USB Interface	Transmits/Receives Data and Control Signal for LED control	

* Specifications can be changed without notice

Software Specification

ltem	Description	
Specific Software for	Provides the Menu for functional control of Hardware and the Menu for creating and transmitting Data of each display device	
HBE-Green-LED	Provides specific Oscilloscope Menu for analyzing the control signal and power	



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Control Program

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Contents

Contents of Education			
With HBE-Green-LED	INTRODUCTION AND MANUFACTURING PROCESS OF LED 1. Introduction to LED 2. Manufacturing Process of LED element BASIC OF LED DISPLAY 3. Equipment Configuration and Test Environment 4. Microcontroller (AVR) 5. Operation Principle and Driver Circuit of LED		
	6. Turning LED on with MCU		
Understanding and	7. Making Color with Color LED		
Using LED	8. Using FND 9. Controlling Dotmatrix LED 10. IR Communication 11. LED BLU (Back light Unit)		
	USING LED 12. OLED 13. LED Lighting 14. LED lighting using Sensor 15. LED Signboard		

Components







HBE-Green-LED User's Manual and AC Power Cable Product CD



USB Cable (A to B Type)